RAJABARIHAAT YOUTH TRAINING CENTRE, RAJSHAHI

By

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

Department of Architecture
Brac University
May, 2020

Declaration

It is hereby declared that

1. The thesis submitted is my/our 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/We have acknowledged all main sources of help.

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Approval

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Abstract

The youth population of Bangladesh is 50.67 million (Census, 2011). Therefore, to provide the one third of total population with proper guidance and institutional support to involve the youth in socio economic activities and encourage them towards productive employment, the Ministry of Youth Development was established in 1978.and the Department of Youth Development in 1981. Since then, Department of youth development has been working for the skill development providing training facilities suitable for the time period.

The vision of the youth development department is to involve the youth in mainstream of nation development process by making them organised, disciplined and productive workforce. To materialise the vision, they provide the youth training facilities along with accommodation so that the unemployed and youth from remote areas can avail the training facilities.

Rajabarihaat youth training centre is one of such project which intends to create a platform for the local unemployed youth (aged 18 to 35 years) to advance their proficiency through the trainings introduced by the department of Youth Development.

Keywords: Youth centre, interactive spaces, courtyards, training centre.

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Acknowledgement

First of all, I am grateful to the Almighty for giving me the patience and keeping me alive till the end. Secondly, my parents and sister for giving me all the support despite my mistakes and all the pain I have caused.

I am greatly thankful to my studio instructors, Dr. Iftekhar Ahmed and Khondaker Hasibul Kabir sir and my seminar advisor, Dr. Muhammad Faruk sir for their guidance and supervision. I am also thankful to Md Anisul Islam, assistant engineer of the department of youth development for his assistance.

Besides, thanks to my mates, Zaki Wamia, Isra Z. Zakaria, Afsara Karim, Afnan and Aishwarya Raihan for the mental support they have given me. All the juniors and seniors and classmates and teachers who have helped through the past years, thanks to them as well.

Finally, my utmost gratitude to my friend, Ar. Nurul Islam for helping me complete the project and keeping me sane.

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Chapter 1: Introduction

1.1 Introduction to the Project

One third of the total population of Bangladesh is youth. Among them, more than 70% of the youth population live in rural area, 45% youth are unemployed and 40% of the total population is underemployed. Therefore, the Ministry of Youth and Sports has been working for the development of the youth since 1978. Afterwards, there are many youth development programme and training centre has been established and more to be constructed as well.

Rajabarihaat Youth training centre is one of the six projects which are to be constructed in six different divisions of Bangladesh. The project will be implemented by the Department of Youth Development. The project is intended to serve the youth from local areas to boost up their potentiality in order to eradicate the unemployment problem and make them self-dependent. The first youth development centre of Rajshahi was constructed in 1981. Initially, the youth development programme provided training in agriculture, poultry and fisheries sector only. However, for now, because of the Vision of Digital Bangladesh, the government has prioritised the technology based training programmes. Thus, there is a need of proper training programme and learning environment and which is why the Ministry of Youth and Sports has taken the initiative to re-design the training centre for the youth development.

1.2 Aim and Objectives of the Project

The project is going to create opportunity for the local youth to advance their competence through the trainings. To materialise the Vision 2041 of making Bangladesh a developed country, the people and most importantly the youth need to be more advanced in technology. Therefore, the new curriculum demands changes in the existing learning environment to make

it more effective. Taking everything into account, the aim of the project is to accommodate all the training facilities and design learning environment for both resident and non-resident trainees and the trainers which would make their learning process interactive and help produce a confident, responsible and self-dependent youth.

1.3 Project Summary

Name of the Project: Rajabarihaat Youth Training Centre, Rajshahi

Implementer of the Project: Department of Youth Development

Location: Rajabarihaat, Godagari, Rajshahi

Site area available for the Project Development: 4.8 Acres

Proposed built-up area of the Project: 1,13,000 sft

Proposed Program of the Project:

Administrative facilities

- Co-ordinator office
- Deputy co-ordinator office
- Senior Instructor
- General office section

Training facilities

- Conference room
- Class room
- Library

Recreational facilities

- Auditorium
- Cafeteria
- Gymnasium

Residential facilities

- Dormitory for boys
- Dormitory for girls
- Officers’ quarter
- Staff quarter

Chapter 2: Literature Review

2.1 History of institutional training

The concept of training has developed ages ago. Until the end of the 18th century the training facility was limited within the apprenticeship and there was no specific type of training programme but according to the need of their job. Later on, the then Prussia started military training at the beginning of the 19th century which included a large number of people getting training together. Following that, at the end of the 19th century during the industrial revolution, a large number of people started getting trained to contribute in development and support specific sectors. Gradually, the type of the training has modified and adapted as per need. Therefore, the institutional training was started with the military training and the practice has increased since the industrial boom to withhold the development process. To keep up with the development the training facilities get modified according to the needs of the development strategy (Adapted from Encyclopaedia Britannica, 2016).

2.2 Types of training

Consequently, to enhance the potential, various sectors are needed to improve for skill development. Hence, there are few types of training programmes given below.

Technical training

Quality training

Skills training

Soft skills

Professional training

Team training

Since the development is ensured when the workforce is well qualified in their particular sectors, the developing countries like Bangladesh adapt this strategy to improve their current position. Therefore, Bangladesh is also providing training facilities in different sectors (Adapted from *Training and Development: Training Methods, Benefits of Training*, n.d.).

2.3 Types of training institutes in Bangladesh

Since Bangladesh is one of the progressive countries and it still has not got any specific strategy like the advanced countries. Nonetheless, Bangladesh has realised that to increase productivity it needs skilled manpower. Which can eventually contribute to the economic progress of this country.

In Bangladesh, there are 62 training courses available under the 6 following categories:

i. IT service management

ii. Project management

iii. Quality management

iv. Agile project management

v. It security and governance

vi. DevOps

2.4 Youth development in Bangladesh

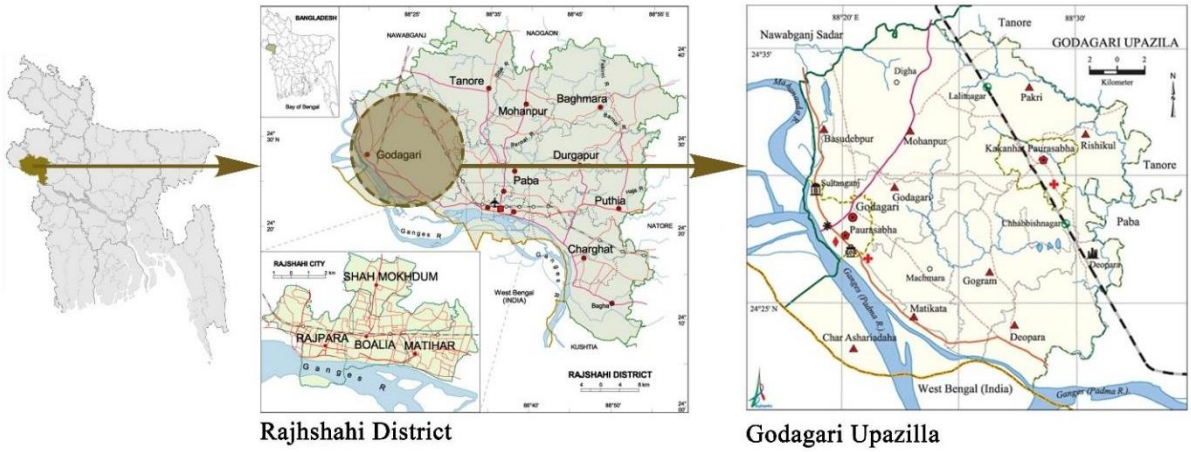
It is needless to say, Bangladesh is one of the most densely populated countries with a population of 150million. Among this huge population, the number of youth is around one third of the total population and 22.08million of them are unemployed. Therefore, it is really

challenging to improve the condition of the country with this vast unemployed population. As a result, to increase the productivity of the manpower, the government has taken an agenda to train the youth population to work on the Digital Bangladesh Vision 2021 to attain the goal of making Bangladesh a developed country by 2041 (Activities of the department of youth development, 2018).

Chapter 3: Site Appraisal

Godagari is one of the 9 upazillas of Rajshahi District. This upazilla has 9 unions and 472 square kilometre of area. Godagari Thana was formed during British period in 1865 and this Thana was turned into an upazilla after more than a century, in 1983.

Figure 3.1: Location of Godagari Upazilla



Source: Banglapedia (Edited by Author)

Area of Godagari: 17.4 square km

Population: 330,924

Male: 50.24% ; Female: 49.76%

Literacy rate: 27.6% (census,2011)

Godagari upazilla shares a border with Tanore on the North-Eastern side and Rajshahi Sadar upazilla on the South-East. Chapai Nawabganj Sadar is on the North-West and West Bengal of India on the West. This upazilla connects Rajshahi and ChapaiNawabganj districts. Godagari Upazilla has 2 Municipality, 9 Union Parishads, 389 Mouzas and 398 Villages.

3.1 Site surroundings

On the south eastern side of Rajabari Haat youth training centre is surrounded by the lands of Government Dairy and Cattle Development farm where they produce grass for the farm which is situated on the west of the site. The site has Rajabari Haat High school adjacent to the boundary on the east. Rajshahi-Nawabganj highway is on the North of the site which is the main access to the site and vast arable lands towards the Kakonhat Union on the North East.

Figure 3.2: Landmarks around the site

Source: Google Earth, 2020 (Modified by Author)

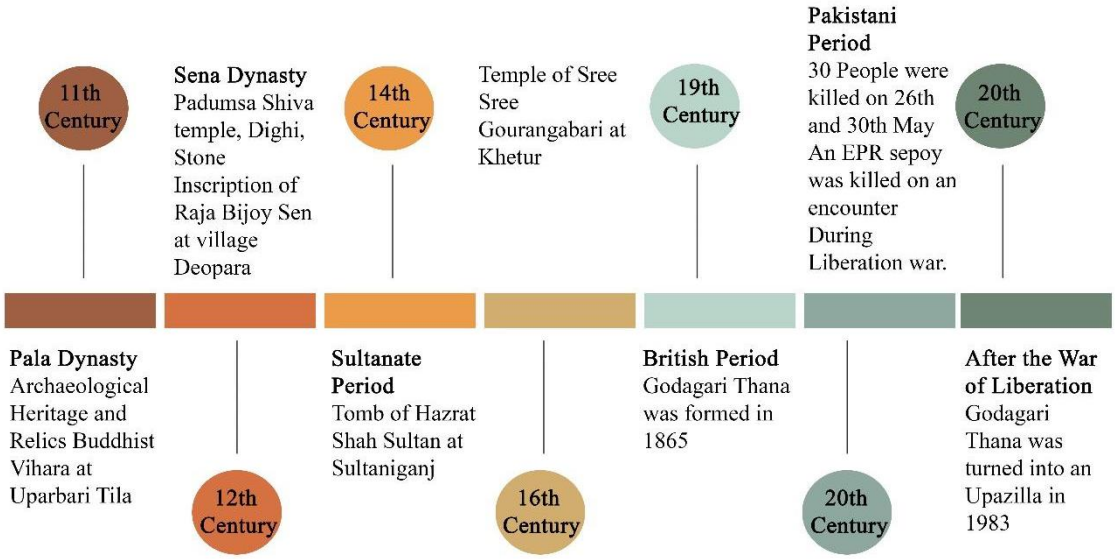
Figure 3.3: Site surroundings

Source: Author

Rajabari Haat Bus Stop
Rajabari Haat Bus Stop
Rajabari Haat Youth Centre Entrance
Residential Building for Dairy Farm employees
Government Dairy and Cattle Development Farm
Dairy Farm cow shed
Abandoned quarters of youth centre officers
Existing quarters for youth centre employees
Abandoned waterbody inside the site
Rajabari Haat High School
Rajabari Haat High School

3.2 Historical Development of the Site

Figure 3.4: Historical significance of Godagari

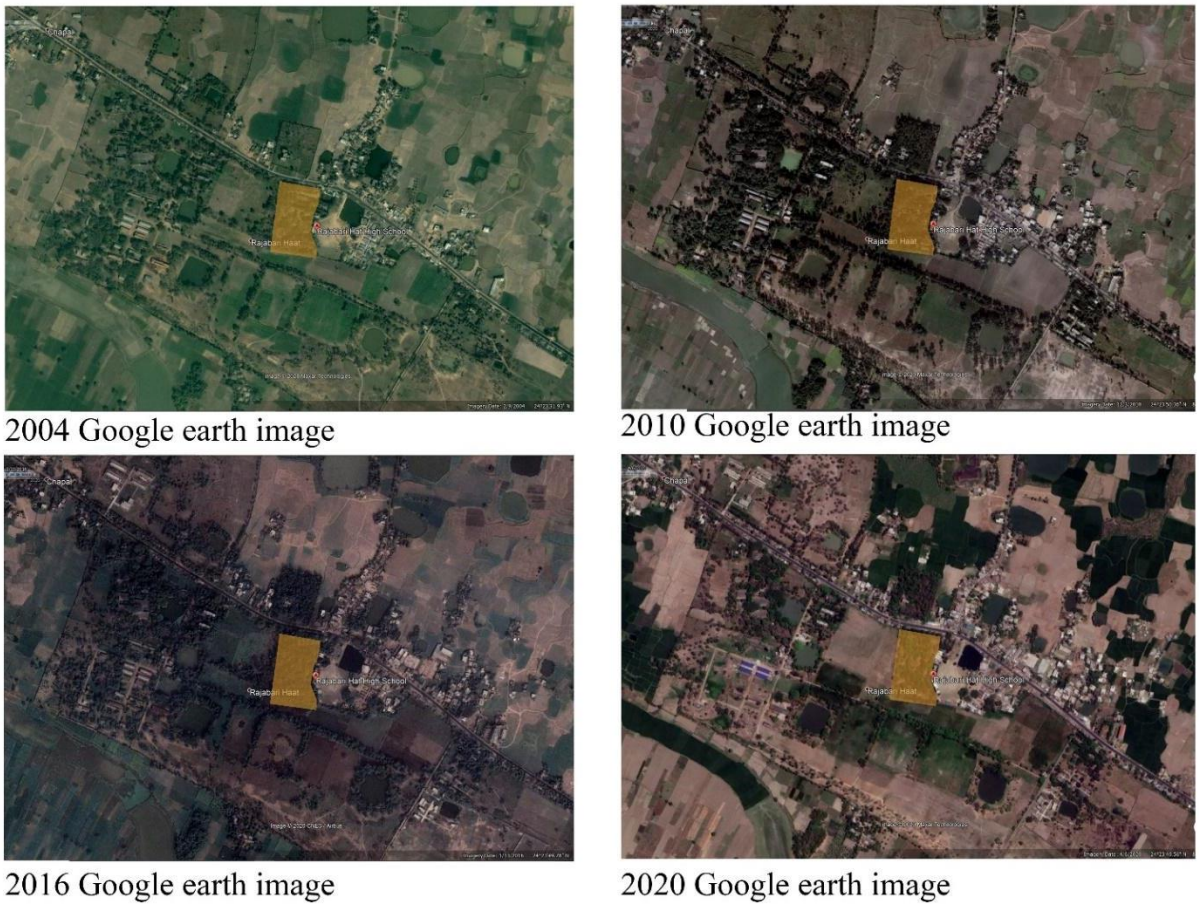


Source: Banglapedia (Modified by Author)

Godagari was declared as Upazilla in 1983, although the Thana was formed over a hundred years ago, in 1865. Many archaeological sites are located in this upazilla. The Upazilla has a history of around a thousand years. There are precedents of archaeological relics and in scripts other than historical sites located within the Upazilla.

Rajabari Haat Youth Development centre was established in 1981 to train the local youth and it was established on the land donated by the Government Dairy and Cattle Development Farm. Since, initially the training institute only offered training in agriculture, poultry and fisheries and the land around the site provided the projects with the rural environment within only a 16 kilometre of distance from the Rajshahi city. Since then, the site's surroundings have not developed any other big government or private projects. The site is still surrounded by a vast arable land. Nonetheless, because of the population growth, the eastern part of the Rajabari Haat bus stop has expanded its residential area in the past 16years.

Figure 3.5: Site surrounding changes in past 16 years



Source: Google Earth, Author

3.3 Geographical Characteristics of the Site

The upazilla has plain land on the eastern side and comparatively uneven on the western part. Because of its geographical location this area is basically a flood free zone which make cultivation possible all the year round. Thus, the site is mostly surrounded by arable lands. The site of the Rajabari haat Youth Training centre is plane and located 20 feet away from the Dhaka-Chapai Highway and the only access is from the highway. The site is mainly rectangular and elongated along the North-South axis. The site has trees aging more than 30 years old and

with big foliage planted along the boundary. Besides, the site is surrounded by agricultural fields and the height of the site is higher than its surrounding.

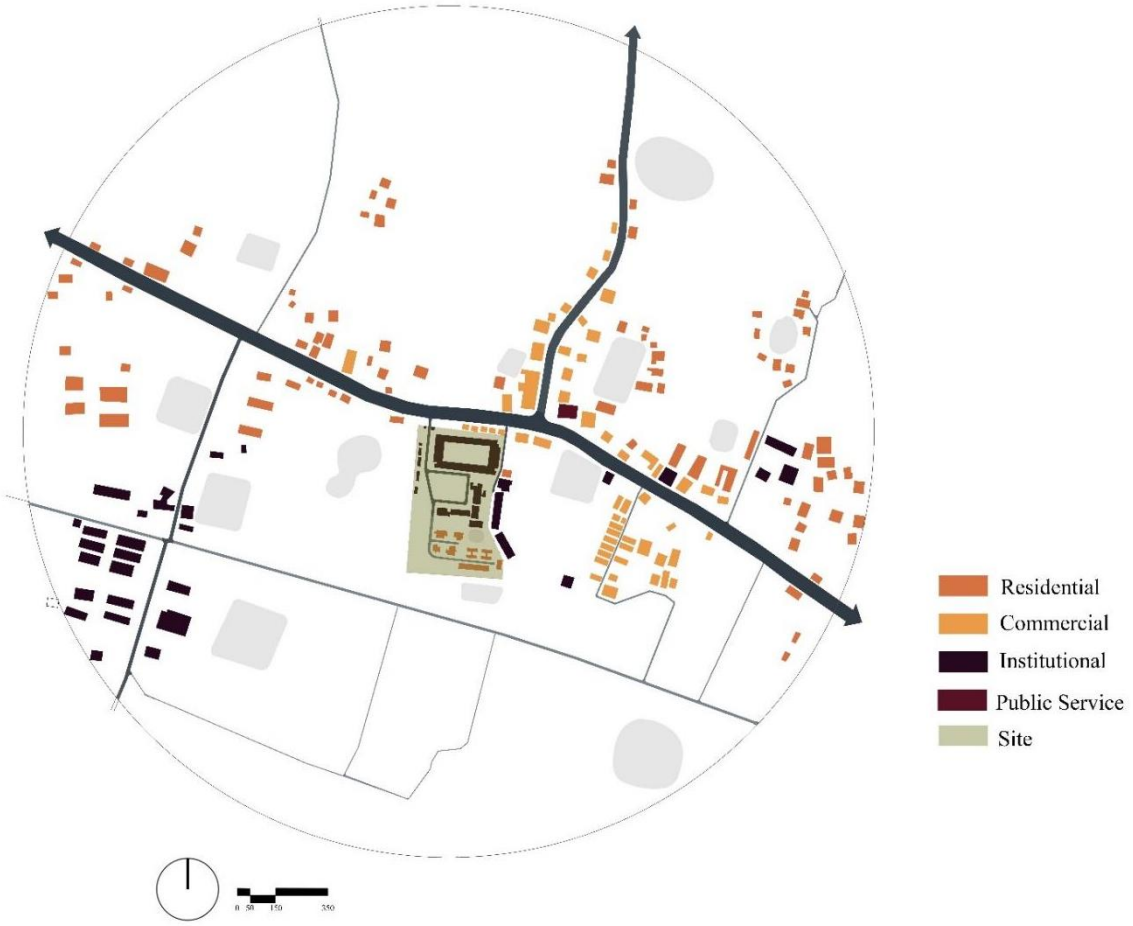
Figure 3.6: Site with existing buildings and vegetation

Source: Author,2020

3.4 Land-use Pattern of the Surroundings

From the map as followed it can be seen that the site is mainly surrounded by residential buildings. Moreover, as the site is right beside Rajabarihaat bus stop and bazar, the commercial zone within a 500m radius is also close to the site. As the government dairy and cattle development farm is located on the west and Rajabarihaat High school on the eastern part of the site, it has got a diversified land use pattern around

Figure 3.7: Land-use pattern



Source: Author, 2020

From the land use pattern it is clear that because of the dairy and cattle farm and the youth development training centre along with Rajabari Haat high school and Rajabari Haat girls' school, the 500m radius area has a big percentage of land used for institutional purpose. Besides, the commercial area percentage shows that there local market is also located within a walking distance from the site.

Other than the building types, most of the land within the 500 metre radius are used for cultivation and grazing field for the Government Dairy and Cattle development farm. Besides, there are a few small water bodies can be seen scattered within the area.

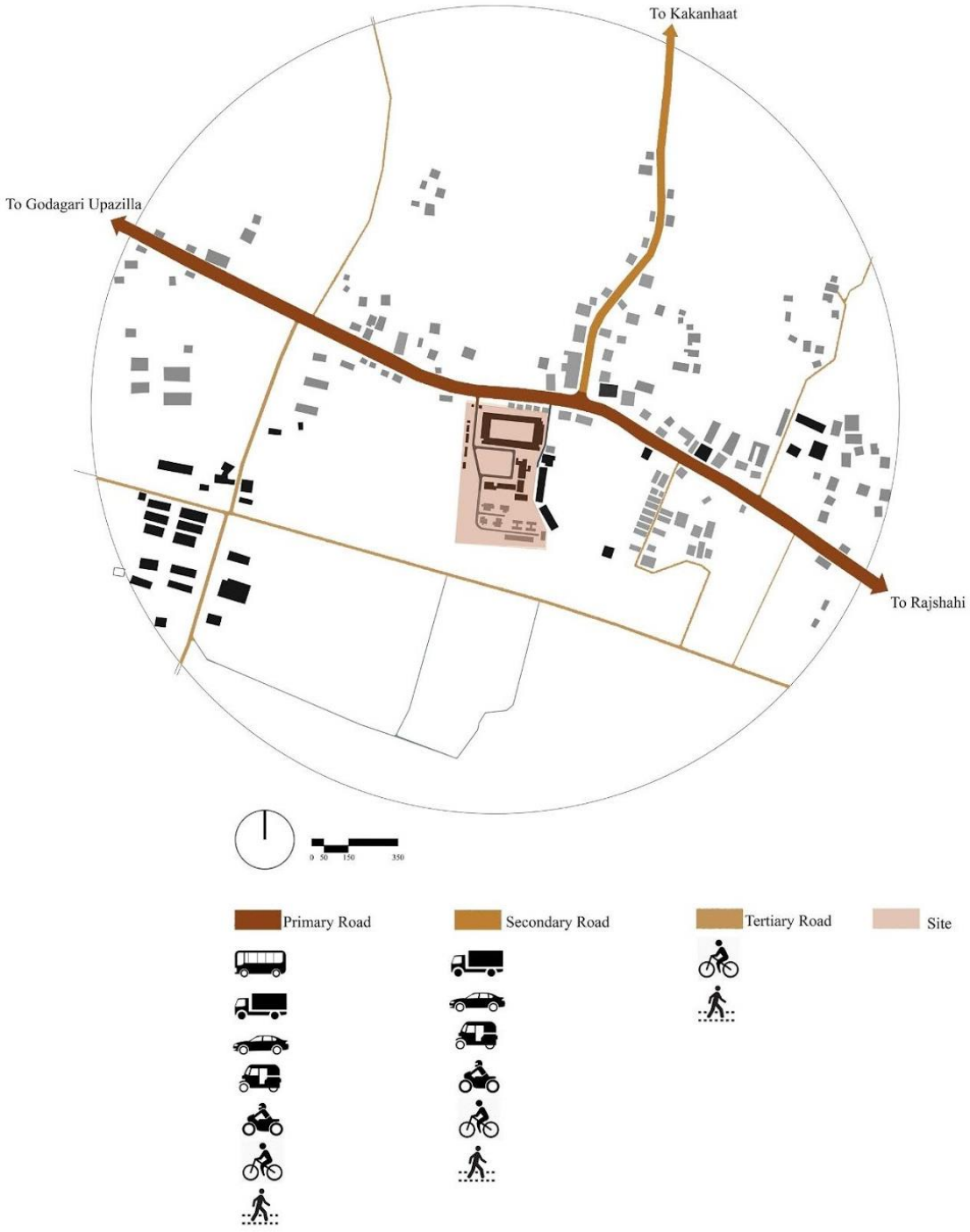
Figure 3.8: Existing green and water bodies around the site

Source: Author, 2020

3.5 Accessibility and Connectivity

The site is 16.8km away from the Rajshahi bus terminal and 16.2km from Godagaria Bus stop. The main connecting road is the Rajshahi-Nawabganj highway. It takes approximately 30 minutes to reach Rajabarihaat Bus stop from the Rajshahi city centre. The site is directly accessible from the primary access road.

Figure 3.9: Road network and accessibility



Source: Author, 2020

3.6 Climatic Conditions

The climate of Bangladesh is subtropical monsoon climate. There are three distinct seasons in Bangladesh. A hot, humid summer from March to June, a comparatively cool, rainy monsoon lasting from June to October and a cool, dry winter from October to March. April is the warmest month of the country in general, and January is the coldest month. Heavy rainfall is the characteristic of the climate of this country. Although some exceptions can be observed in the western part of Rajshahi.

Godagari Upazilla lies on 24m above sea level with a Tropical Climate and belongs to the region of Bangladesh where there is comparatively less rainfall recorded Rainfall recorded in this region during summer season with an average annual temperature of 25.9°C with 1350mm precipitation falls. The most precipitation falls is about 289mm recorded in July and the least recorded falls is in December, 2mm.The highest average temperature is recorded in May at around 30°C and the lowest average temperature is recorded in January at 18.3°C.

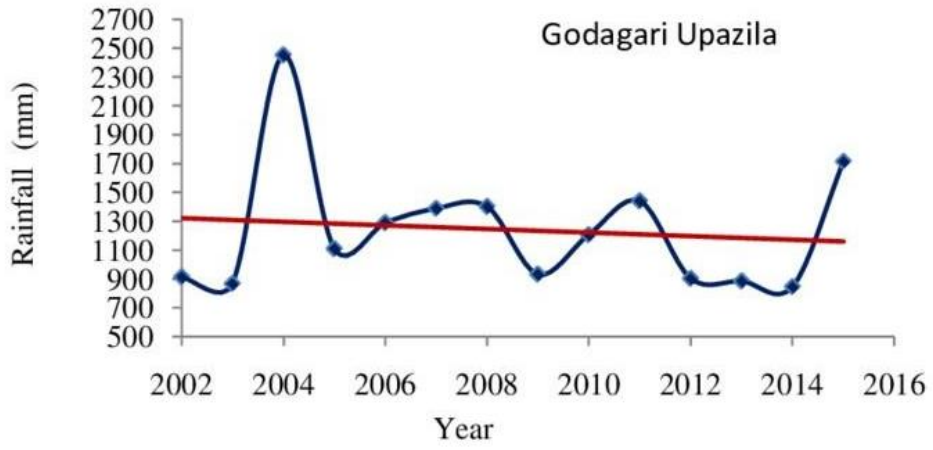


Image: Annual Rainfall status

Source: Journal of water resource and protection

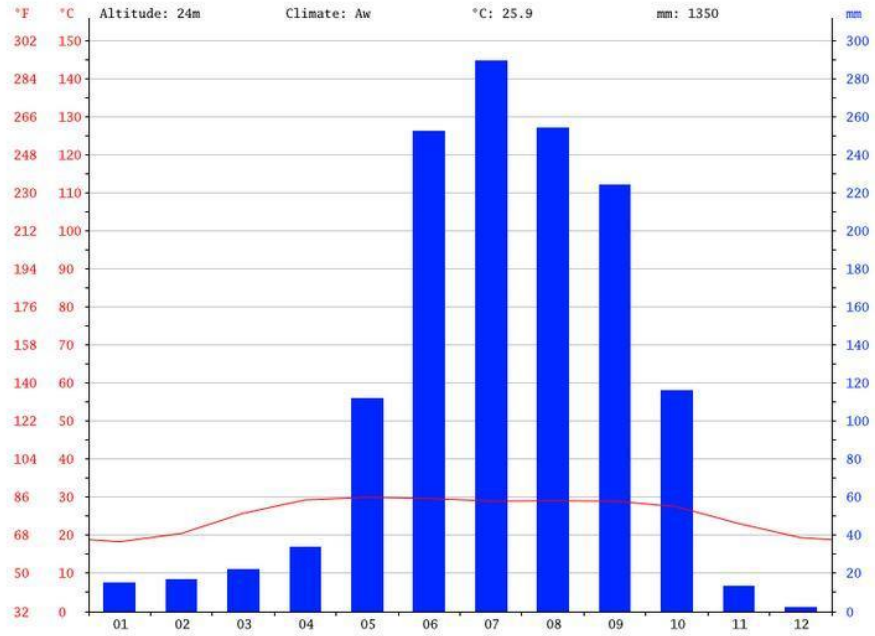


Image: Godagari climate graph-weather by month

Source: Climate-data.org

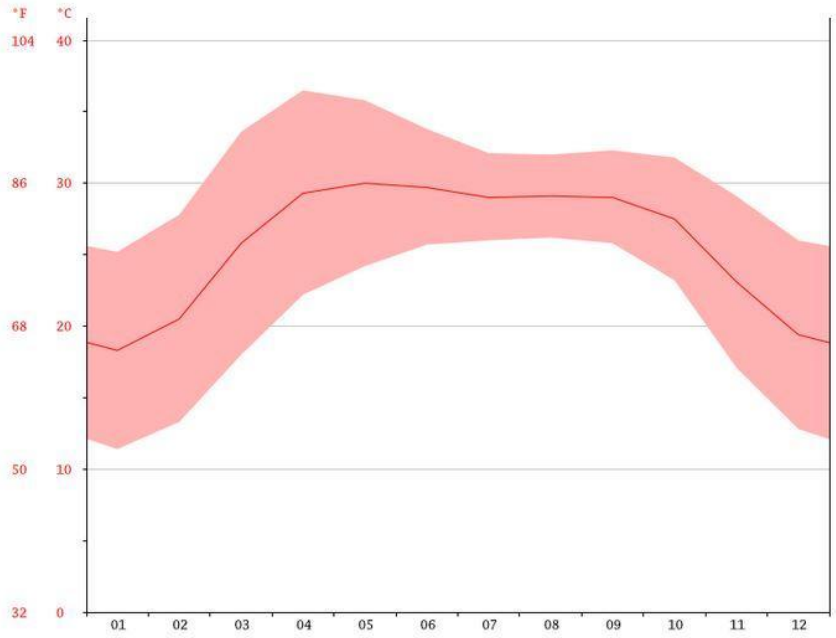


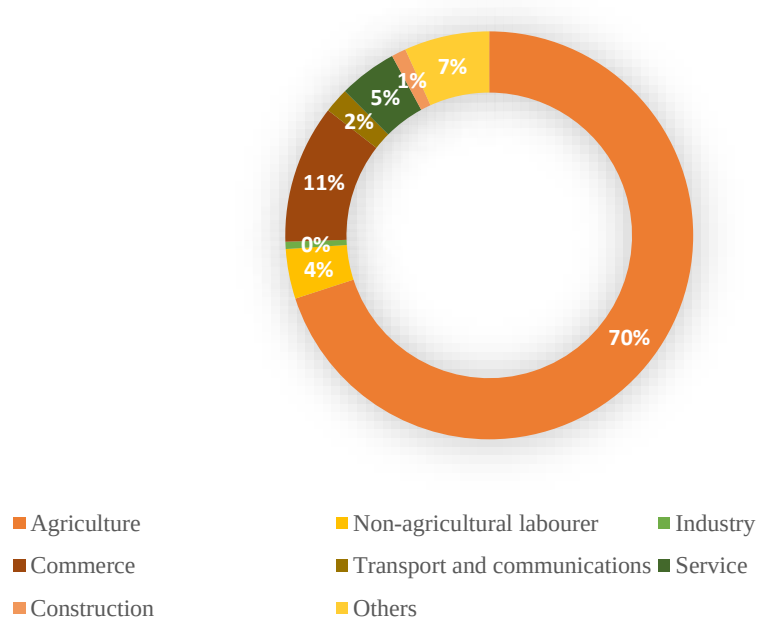
Image: Godagari average temperature

Source: Climate-data.org

3.7 Socio-Cultural and Economic Contexts

Population of Godagari upazilla is 330,924 (census 2011), among them 166,260 are male and 164,664 female. That means the male female ratio is almost the same. 49.8% of the total population is female and 50.2% are male. The literacy rate of the area is 46.3%.

Figure 3.10: Main source of income, Godagari Upazilla



Source: Banglapedia

The main source of income in Godagari is agriculture based. The site is surrounded by vast arable lands. Thus, there is no industrial development in nearby areas and most of the people who live around are low to middle income group.

3.8 Images of Existing Site Condition

Figure 3.11: Entrance of the Youth centre

Figure 3.12: Existing academic building condition

Figure 3.13: Ruins of officers' quarter

Figure 3.14: Existing staff quarter

Figure 3.15: Existing vegetation and waterbody

Source: Author

Chapter 4: Case Study Appraisal

Case study is the in-depth investigation of any particular topic which can be about an incident, group or community and even about an individual. Moreover, it incorporates studies, examination or analysis of any information. In an architectural case study, the study is conducted to understand the different prospects of the topic of the project in respect of the similar project. Thus, the following case studies were done to understand the various aspects about a training and youth centre. The study would focus on the functional analysis, correlation of the spaces, climatic responsiveness, and material selection and so on. The projects which were chosen for the case study are given below:

1. Herningsholm Vocational School

   Location: Herning, Denmark

   Designer: C. F. Moller architects

2. Gehua Youth and Cultural Centre

   Location: Qinhuangdao, China

   Designer: OPEN Architecture

4.1 Herningsholm Vocational School

Project brief

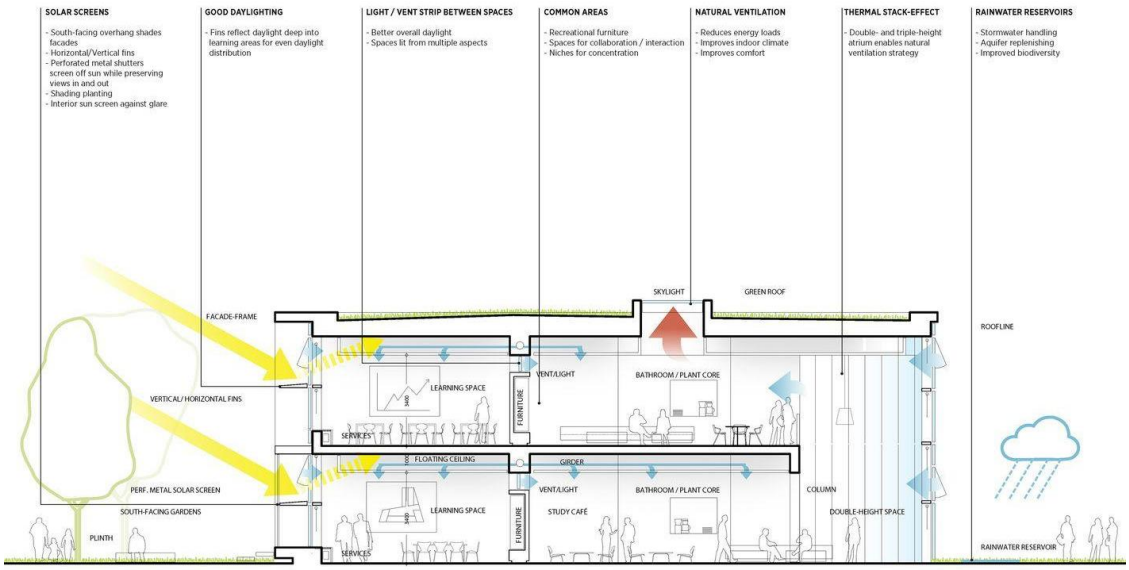
- Location: Herning, Denmark
- Built area: 4700 m²
- Client: Herningsholm Vocational School
- Architects: C. F. Moller architects
- Project year: 2014

The reason behind choosing this project for case study is the programmes of the building and the placement of the functions.

4.1.1 Environment and micro-climate

Solar screens are placed to ensure enough daylight inside the building and prevents glares. Besides, the fins on the façade also reflect daylight directly deep into the learning areas and make sure that the daylight is evenly distributed. Besides, there are light and vent strips between spaces for better overall daylight. Moreover, to reduce energy load and an improved comfort space and natural ventilation the thermal stack effect is applied by designing double and triple height atriums. Moreover, rainwater is harvested which improves the biodiversity.

Figure 4.1.1: Cross section sustainable features



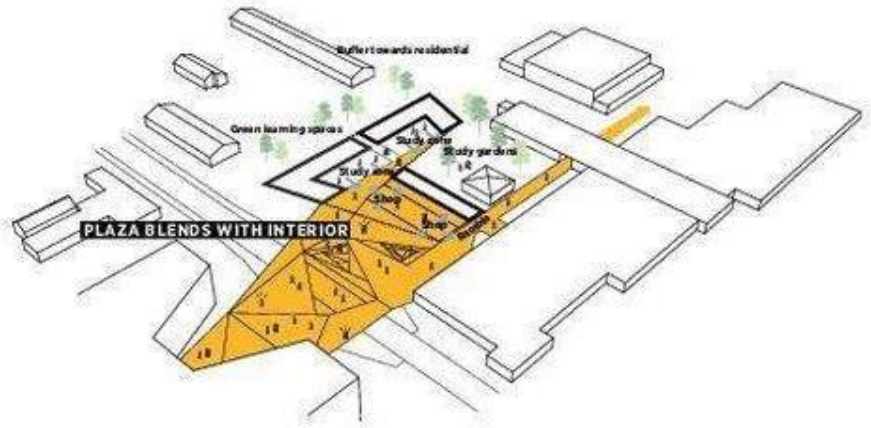
Source: C.F. Moller architects

4.1.2 Form and Function

The building was supposed to be big enough to accommodate 1200student every year. Besides, there are more functions such as:

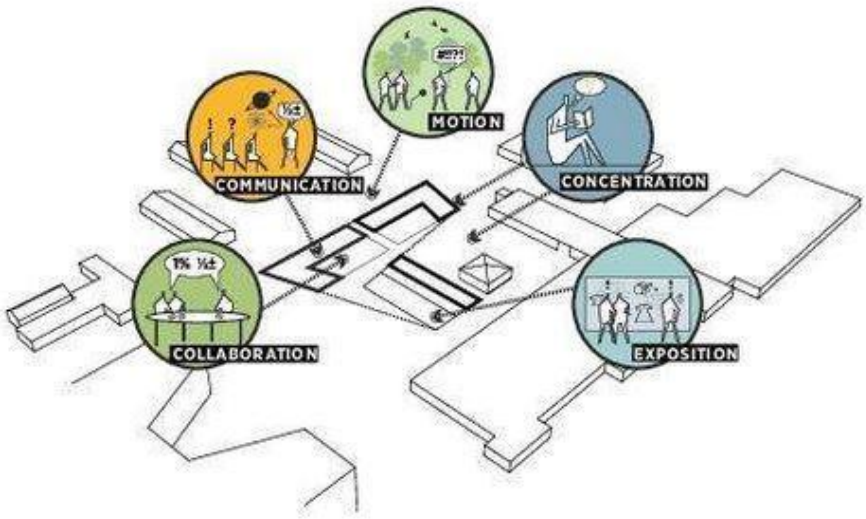
- 400 seat amphitheatre
- Specialised class rooms
- PE rooms
- Laboratories
- Shops
- Study gardens
- Workshops
- Admin office
- Library
- Teachers' lounge

Figure 4.1.2: Urban Plaza: connects interior and exterior



Source: C. F. Moller architects

Figure 4.1.3: learning environments: varied spaces and flexible learning modes



Source: C. F. Moller architects

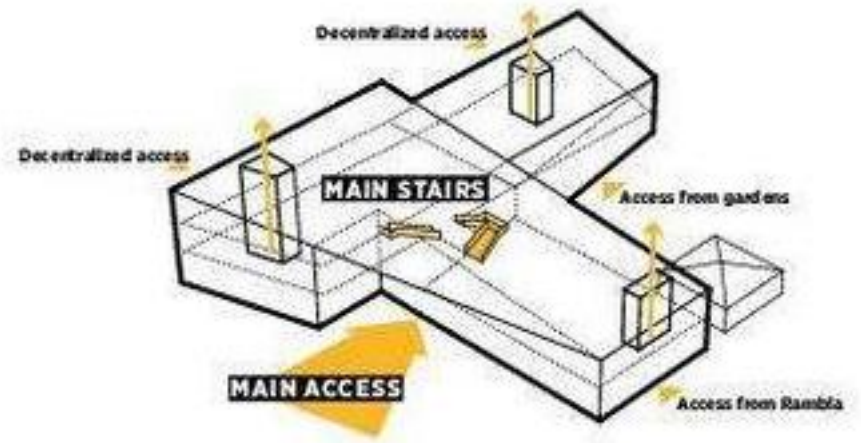
Typology of spaces

Hierarchy of spaces

4.1.3 Horizontal and vertical circulation

Since the building has the highest height of three storied and the lowest of two storied the vertical access is needed to make the building functional. The building has stairs and lift to vertically connect the spaces. Besides, the building has a large floor area, so the spaces of the same floors are connected by the corridors and lobby spaces which also work as gathering spaces.

Figure 4.1.4: Circulation: access and connections



Source: C. F. Moller architects

4.1.4 Structural details

The building areas have large spans such as classrooms, laboratories, libraries etc. Hence, to create a large spanned area frame structure and flat roof are used in the building.

4.2 Gehua Youth and Cultural Centre

Project brief

- Location:
- Built area: 2700 m²
- Client: Gehua group, LAA fund
- Architects: OPEN Architecture
- Project year: 2012

This project was selected for study to understand the correlation of the spaces. Although the project area is less than 3000 square metre and a one storied building still the free flowing space connects the indoor and outdoor space for more social interaction.

4.2.1 Climatic Consideration

The site is located away from urban chaos. According to the architects, the building is totally blended with nature. Passive energy strategy was practiced in this building. The floor height glasses let enter the daylight and illuminate the corridors and even classrooms. Besides, the building has also got the natural ventilation.

4.2.2 Form and Function

The functions of the building are:

- Theatre
- DIY space
- Hall of DIY space

- Central control room
- Multi-functional room
- VIP room
- Guest room
- Infirmary
- Café
- Kitchen
- Small activity space
- Gallery

One of the most important features of the building is the theatre. Although the theatre is rather small with 120 seats, the theatre can be extended towards the multipurpose courtyard. There are two operable walls which can be opened up to use the whole space as a one space. The educational block is located at the eastern side of the building and the theatre is one the west.

Figure 4.2.1: Ground Floor Plan

Source: OPEN Architecture

4.2.3 Horizontal and vertical circulation

The vertical circulation includes one staircase to the roof and steps to reach multiple levels of the floor. Horizontal circulation includes the corridors connecting the spaces.

Figure 4.2.2: circulation

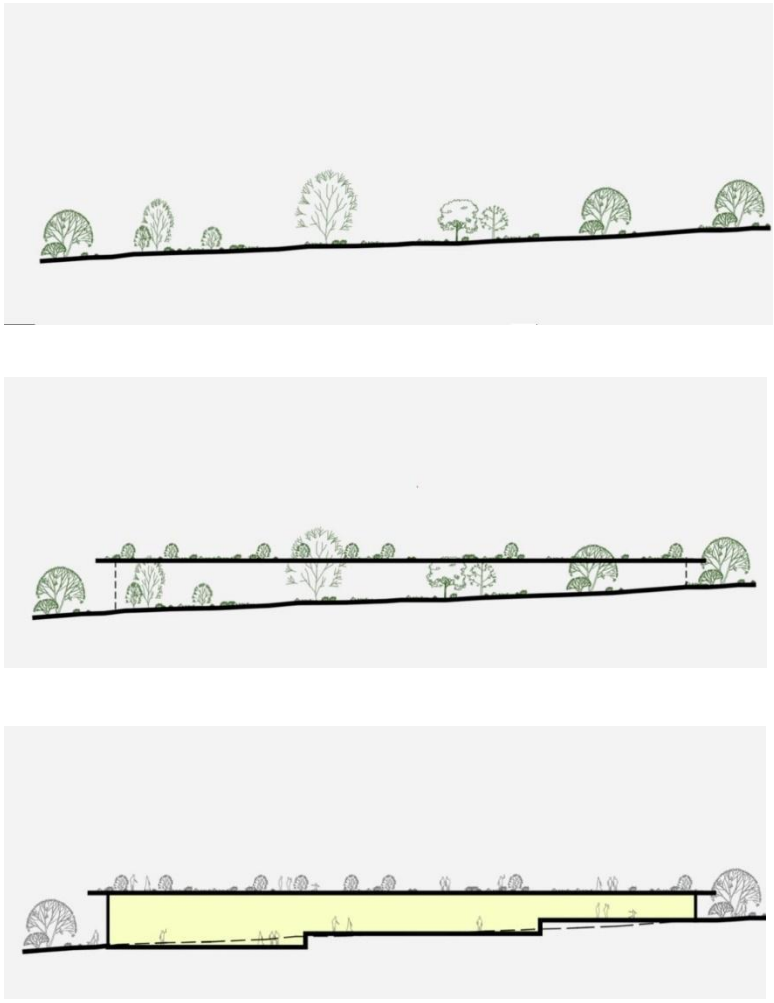
Vertical circulation

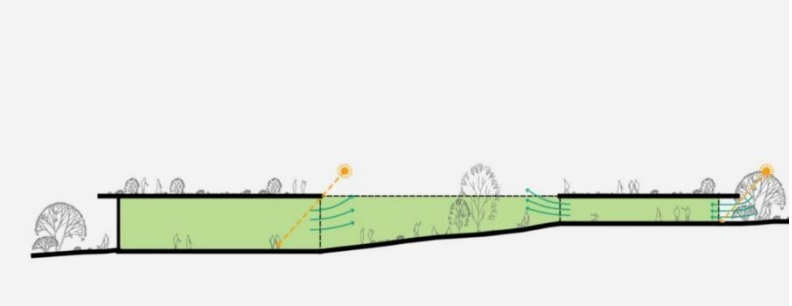
Source: open architecture

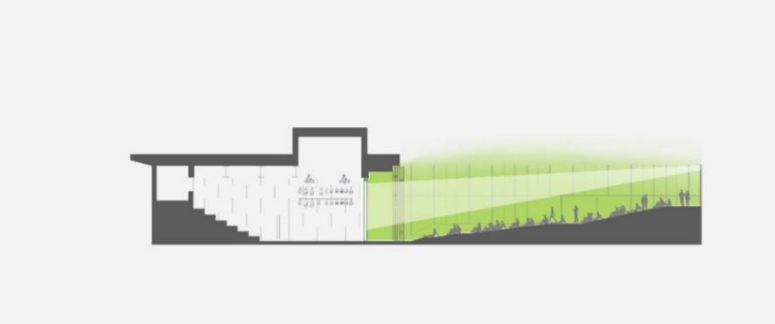
4.2.4 Site Planning and Landscape detailing

At the beginning of the design process, the building was developed as a one whole roof and the form was derived from off-setting the site and then the functions were put according to its space requirements. The building is placed following the natural slope of the site of about 3 metres which accommodate 3 different types of functions. The theatre is placed on the lower end of the slope and the activity spaces like classrooms which are of low height are placed on the higher end of the slope. A multipurpose courtyard was developed in the middle which has paved ramps and soak able green area.

Figure 4.2.3: design development







Source: Open architecture

4.2.5 Structural details

The concrete walls in the middle work as the load bearing wall and cover large span of spaces.

Chapter 5: Program Appraisal

Rajabarihaat youth training centre aims to serve the local youth both residential and non-residential students as per the training course suggests. Therefore, the programmes are organised accordingly to serve the users and follow the national building code. Thus, the programme analysis includes the programme given by the client, the standard for the particular function, ground coverage according to the building code to rationalise the accuracy of programmes.

5.1 Proposed programme

According to the client's proposal the following functions are to be included to create the built environment of the project.

I. Administrative facilities
II. Training facilities
III. Recreational facilities
IV. Residential facilities

The organogram of the project shows the structure and the number of user.

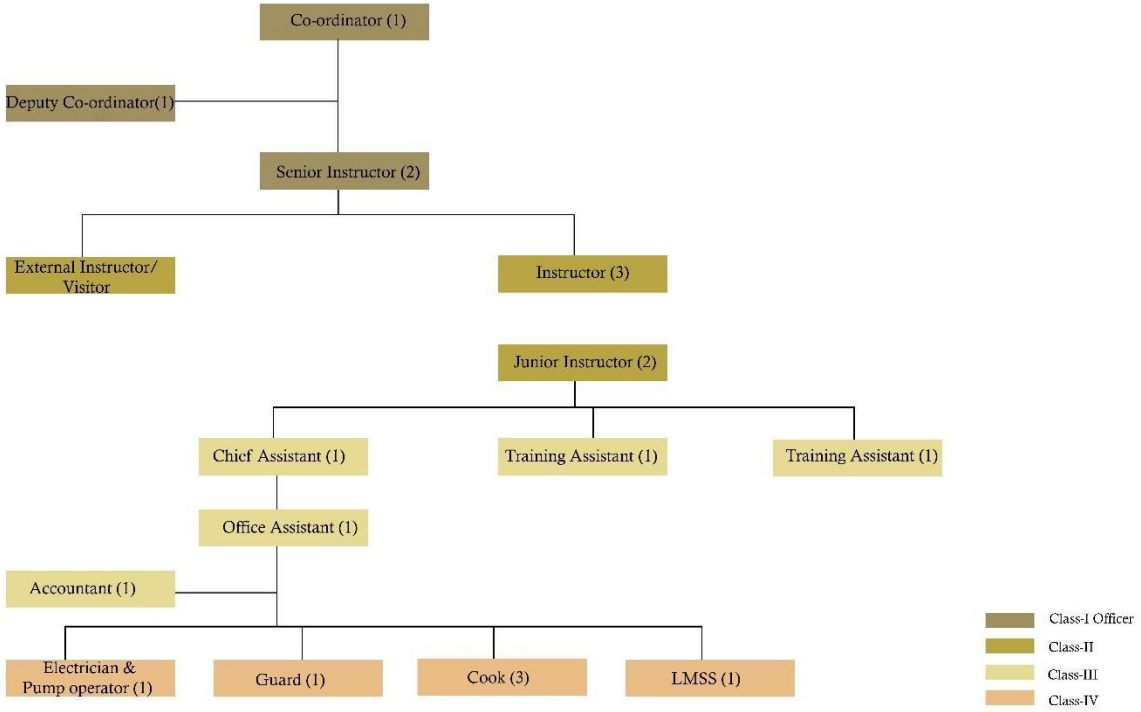


Figure 5.1: Organogram (Source: Department of Youth Development)

5.2 Functional programme development

In this section, the detailed functional programmes have been analysed under the major functional zones.

5.2.1 Administrative Facilities

Administrative sector consists of 20 officers and employees. Two senior Instructors handle the academic facilities of the training centre. five permanent instructors work under the senior instructor and the external instructors and visitors as well.

	Functional space	Number of units	Number of users	Area per unit (in sft)	Total area (in sft)
A.	Administrative facilities				
1.	Co-ordinator office	1	1	200	200
2.	Deputy co-ordinator office	1	1	200	200
3.	Senior instructors office	2	2	120	240
4.	General office section	3	6	200	600
5.	Conference room 1	1	25	500	500
6.	Conference room 2	1	20	430	430
7.	Archive and media room	1	1	200	200
8.	Printing and service	1		100	100
9.	Prayer Space	1	1	900	900
10.	Toilet	2		150	300
			Subtotal		3670
	30% circulation				1100
	Total				4770

Table 1: Administrative facilities space requirements

5.2.2 Training Facilities

This training centre provides both practical or studio based training and lecture or theory based training. There are in total 20 types of courses offered in this training centre. For example, types of training are computer laboratory based, studio based, lecture based and some of the courses are required to be worked on in the discerned field. Nonetheless, some of the courses require both theoretical and practical based training. The classroom size, the name of the training course and type of classroom required for the courses are:

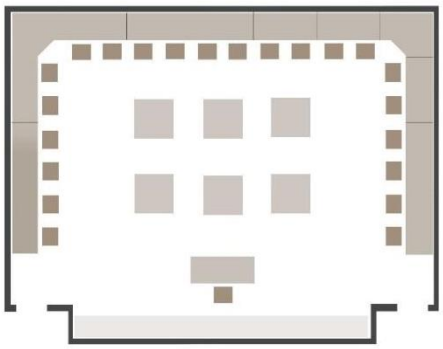
Sl	Course Name	Type of training	Number of students
1.	Basic Computer training	Lab/studio	60
2.	Computer graphics and video editing	Lab/studio	30
3.	Electronics	Lab/studio	30
4.	Electrical and houseware	Lab/studio	30
5.	Refrigerator and Air conditioning	Lab/studio	20
6.	Tailoring	Lab/studio	30
7.	Block, Tie-dye and screen printing	Lab/studio	30
8.	Culinary	Lab/Lecture	20
9.	Handicrafts	Lab/Studio	30
10.	Communicative English learning	Lecture	40
11.	Modern office management	Lecture	40

12.	Freelancing/Outsourcing	Lecture	30
13.	Tourism and hotel management	Lecture	30
14.	Salesmanship	Lecture	30
15.	Youth leadership training	Lecture	20
16.	Women leadership development	Lecture	20
17.	Life skill and family life education	Lecture	20
18.	Career planning and development	Lecture	30
19.	Agriculture and Horticulture	Lecture/Field	30
20.	Livestock management	Lecture/Field	20s

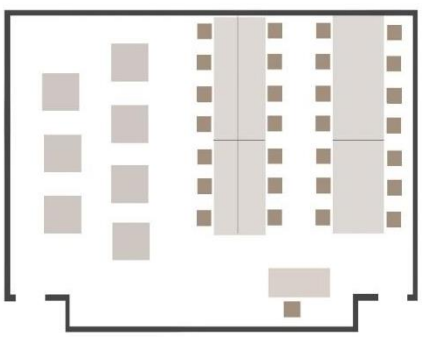
Table 2: List of courses

Different types of courses require different types of classroom arrangement. Practical learning course classrooms are going to differ from the lecture based courses.

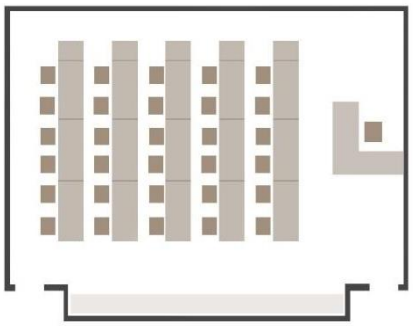
The curriculum of Rajabarihaat youth training centre provides two types of computer training. Besides, the computer laboratories layout varies according to the computer course syllabus and effective learning.



a. Perimeter Classroom



a. Back to back Classroom



c. Lecture Classroom

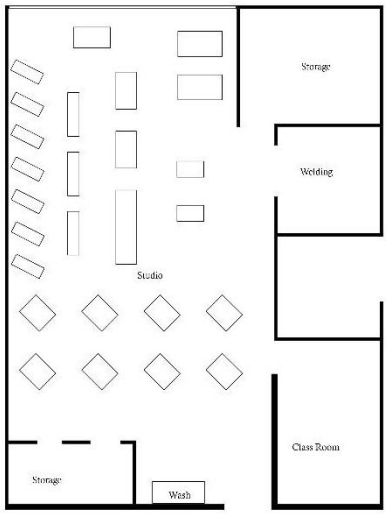
Figure 5.2: Types of computer classroom arrangement (Source: School furniture handbook)

The three types of computer lab arrangements are done in a 1400 square feet classroom for 30 students. Nonetheless, each type of arrangement is done for different computer courses for creating a more effective learning environment.

a. Perimeter Classroom: A perimeter classroom functions well for individual learning and non-lecture based courses. This type of classroom is much suitable for computer aided design courses and graphic design classes
b. Back to back Classroom: This type of computer lab allows the students to learn individually and in small groups as well. These arrangements are suitable for drafting, animation or fashion designing courses.

c. Lecture Classroom: The lecture classroom allows students to work along with the instructor rather than working individually or in a group. Generally, this classic arrangement functions well in basic computer training.

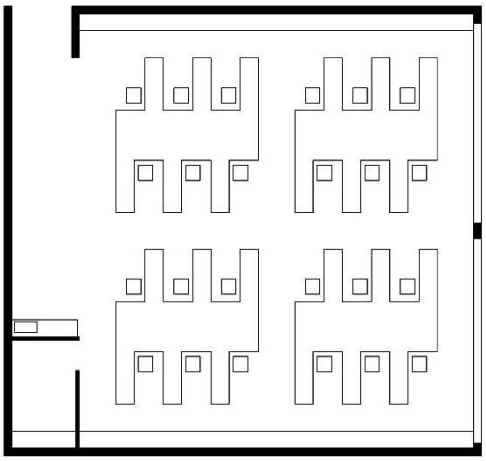
The arrangement for electronics, electrical and houseware, refrigerator and air conditioning laboratories can be as follows:



This type of laboratory requires separate storage room, a space for metal welding and might include a demonstration lecture room. The figure 5.1.3 shows an approximate arrangement for 30 students in 3500square feet area.

Figure 5.3: Electronics and electrical houseware laboratory arrangement (Source: Chiara, Joseph, 1990)

The tailoring workshop requires a sewing room along with a clothing demonstration lecture hall. Storage space is needed for storing fabrics and portable machines. Besides, every sewing station needs an incandescent light overhead.



This tailoring classroom is for 24 students and the area of the room is 2400 square feet.

Figure 5.4: Tailoring classroom (Source: Chiara, Joseph, 1990)

Another specified laboratory of this institute is for culinary arts. The classroom arrangement is suitable for 20 trainees. The area in total for the food lab and preparation withal a storage room is 1800square feet.

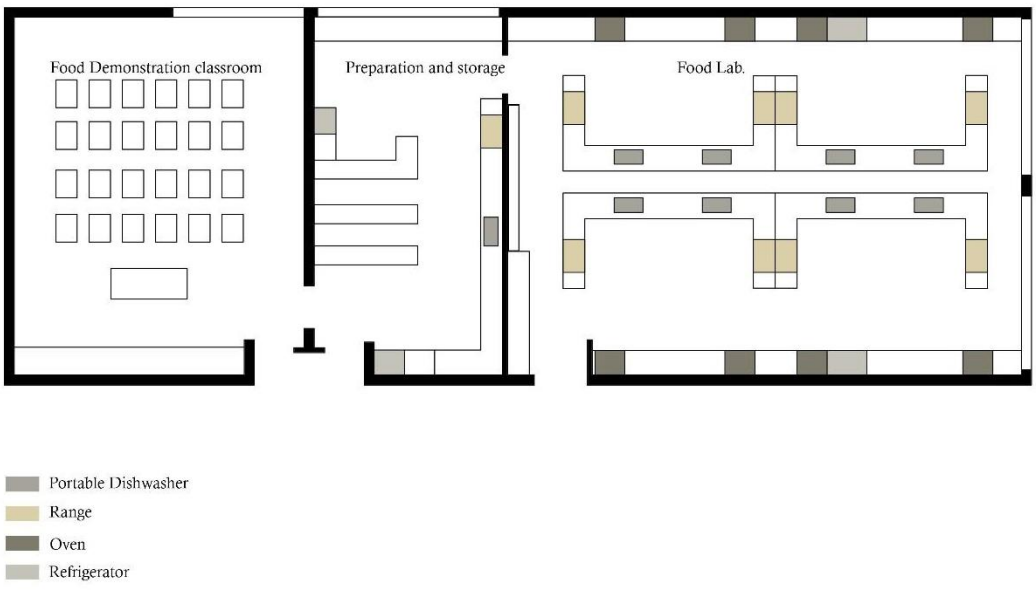


Figure 5.5: Food Laboratory arrangement (Source: Chiara, Joseph, 1990)

Besides the specified practical learning classrooms, this training institute requires regular lecture classrooms for theoretical learning. Here are three types of classroom arrangement in 800 square feet, 624 square feet and 1160 square feet area.

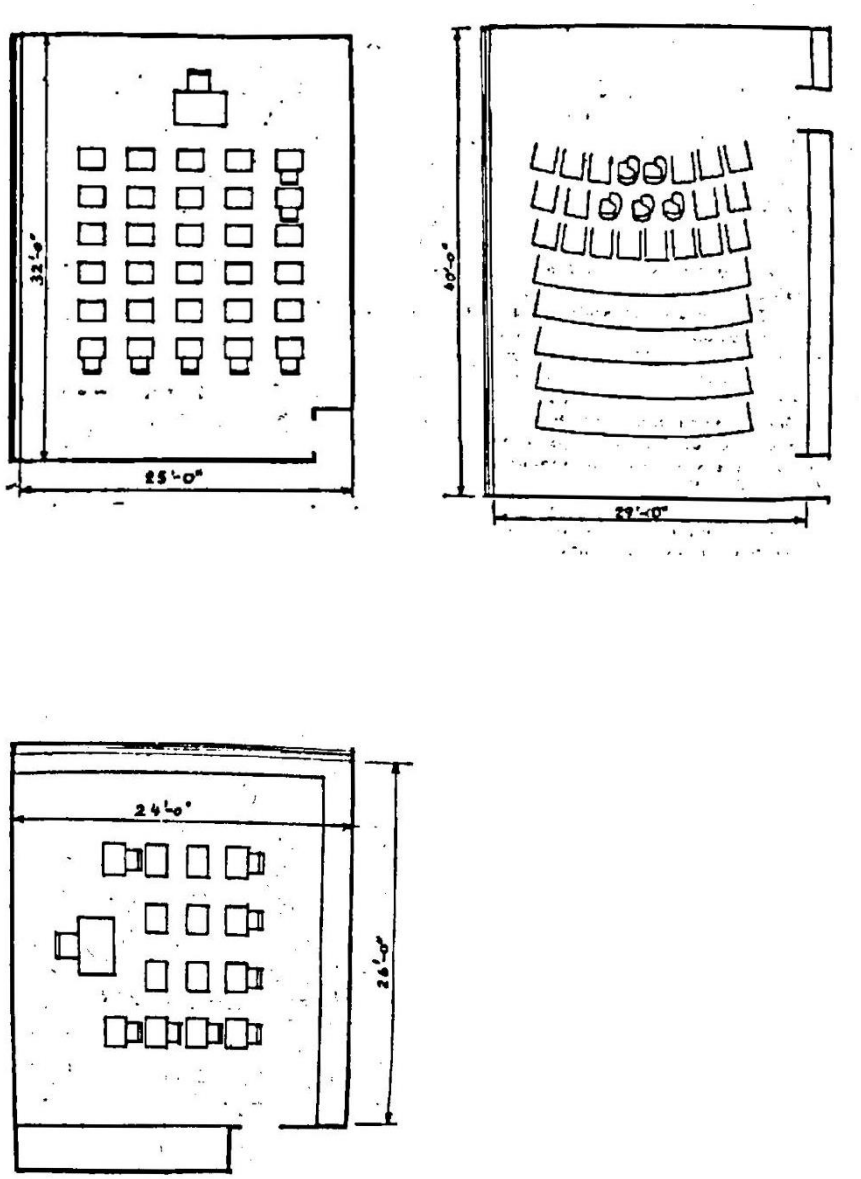


Figure 5.6: Lecture classroom arrangement (Source: Chiara, Joseph, 1990)

	Functional space	Number of units	Number of users	Area per unit (in sft)	Total area (in sft)
B.	Training facilities				
1	Teachers common room	1	15	900	900

2	Library	1		2000	2000
3	Basic computer	2	30	1200	2400
4	Computer graphics and video editing	2	30	1200	2400
5	Electrical and house wiring	1	20	1200	1200
6	Electronics	2	20	1200	2400
7	Refrigeration and air conditioning	1	20	2000	2000
8	Handicrafts	1	30	1200	1200
9	Tailoring	1	20	1200	1200
10	Block, tie-dye and screen printing	1	30	2000	2000
11	Culinary arts	1	20	1200	1200
12	Lecture class room	10	30	800	8000
13	Common toilet for teachers	2		150	300
14	Common toilet for students	4		300	1200
				Subtotal	28400
	30% circulation				8520
	Total				36920

Table 3: Training facilities space requirements

5.2.3 Recreational Facilities

Since this youth development centre not only supports the youth with modern training facilities but promotes the physical and mental health of the trainees as well as the administrative bodies. There will be a 300 seat auditorium for seminar, symposium and annual cultural activities. Besides, indoor game room and gymnasium facilities are going to be available for both male and female students. A cafeteria to support the non-resident instructors, visitors and the students. Lastly, a display and sales centre to display the works of the trainees and sell the goods produced by them in the training institute.

	Functional space	Number of units	Number of users	Area per unit (in sft)	Total area (in sft)
C.	Recreational facilities				
	Multipurpose Hall				
1	Entry and lobby	1		500	500

2	Seating area	1	300	3600	3600
3	Stage	1		1200	1200
4	Backstage	1		600	600
5	Control room	1	2	400	400
6	Storage	1		300	300
7	Toilet	2		200	400
				Subtotal	7000
	Cafeteria				
1	Café	1	50	1000	1000
2	Kitchen	1		400	400
3	Storage	1		80	80
4	Toilet	2		50	100
				Subtotal	1580
	Display and sales centre				
1	Sales counter and waiting	1		300	300
2	Display and exhibition	1		1200	1200
				Subtotal	1500
	Total (with 30% circulation)				13100

Table 4: Recreational facilities space requirements

5.2.4 Residential Facilities

The residential facilities can be categorised in four different types. Those are

i. Dormitory for 120 boys
ii. Dormitory for 80 girls
iii. Officers' quarter
iv. Staff quarter

The size of the residences/ flats for the government officers and employees are specified. Ministry of Public works and urban developments published the residential space standard for the Government officers and employees in 1992.

Categories of officer and employee	Pay Scale (taka)	Allottable floor area (Square feet)	Entitlement
Class I	8000 and above	1800+200 for garage	Superior Type
	7100-7999	1500	'F' Type
	5500-7099	1250	'E' Type
	2850-5499	1000	'D' Type
Class II and III	1225-2849	800	'C' Type
	1125-1725	600	'B' Type
Class IV	1050-1915	500	'A' Type

Table 5: Residential Space Standard for Government Officers and Employees (Source: Rashid, 2002)

According to the residential space standard and organogram of the project, there will be 3 types of quarters for the officers and employees such as E, C and B type quarters. The facilities available for these quarters are as follows.

	E type quarter				
1	Foyer	1		50	50
2	Master bedroom	1		170	170
3	Bedroom	2		150	300
4	Living	1		200	200
5	Family Living	1		80	80
6	Dining	1		150	150
7	Kitchen	1		80	80
8	Toilet (M. Bed)	1		45	45
9	Toilet (Bed)	2		40	80
10	Veranda (M. Bed)	1		50	50
11	Veranda	1		40	40
				Total	1250

	Functional space	Number of units	Number of users	Area per unit (in sft)	Total area (in sft)
	C type quarter				

1	Master bedroom	1		130	130
2	Bedroom	2		100	200
3	Living	1		150	150
4	Dining	1		100	100
5	Kitchen	1		60	60
	Toilet (M. Bed)	1		40	40
	Toilet (Bed)	1		35	35
	Toilet (Common)	1		30	30
	Veranda	1		35	35
	Veranda(Kitchen)	1		20	20
				Total	800

	Functional space	Number of units	Number of users	Area per unit (in sft)	Total area (in sft)
.	B type quarter				
1	Master bedroom	1		120	120
2	Bedroom	1		100	100
3	Living	1		120	120
4	Dining	1		100	100
5	Kitchen	1		60	60
	Toilet (M. Bed)	1		40	40
	Toilet (Common)	1		30	30
	Veranda	1		30	30
				Total	600

D.	Residential facilities				
	Dormitory for boys				
1	Boys' accommodation (3 beds)	25	75	300	7500
2	Boys' accommodation (2 beds)	20	40	200	4000
3	House Parent's room	1	1	200	200
4	Common Room	1		2000	2000
5	Dining Room	1	50	600	600
6	Kitchen	1		250	250
7	Toilet	5		350	1750
				Subtotal	16300
	Dormitory for girls				
1	Girls' accommodation (3 beds)	15	45	300	4500
2	Girls' accommodation (2 beds)	20	40	200	4000
3	House Parent's room	1	1	200	200

4	Common Room	1		2000	2000
5	Dining Room	1	50	600	600
6	Kitchen	1		250	250
7	Toilet	5		350	1750
				Subtotal	13300
	Quarter				
1	E type quarter	4		1250	5000
2	C type quarter	6		800	4800
3	B Type quarter	9		600	5400
				Subtotal	44800
	30% circulation				13440
	Total				58240

Table 6: Residential facilities

The total area required for the programme:

	Types of Facilities	Total area (In sq-ft)
1	Administrative facilities	4770
2	Training Facilities	36920
3	Recreational Facilities	13100
4	Residential Facilities	58240
	Total (with 30% circulation)	113030

Table 7: Total required area

From the programme analysis, a functional relationship can be derived as follows.

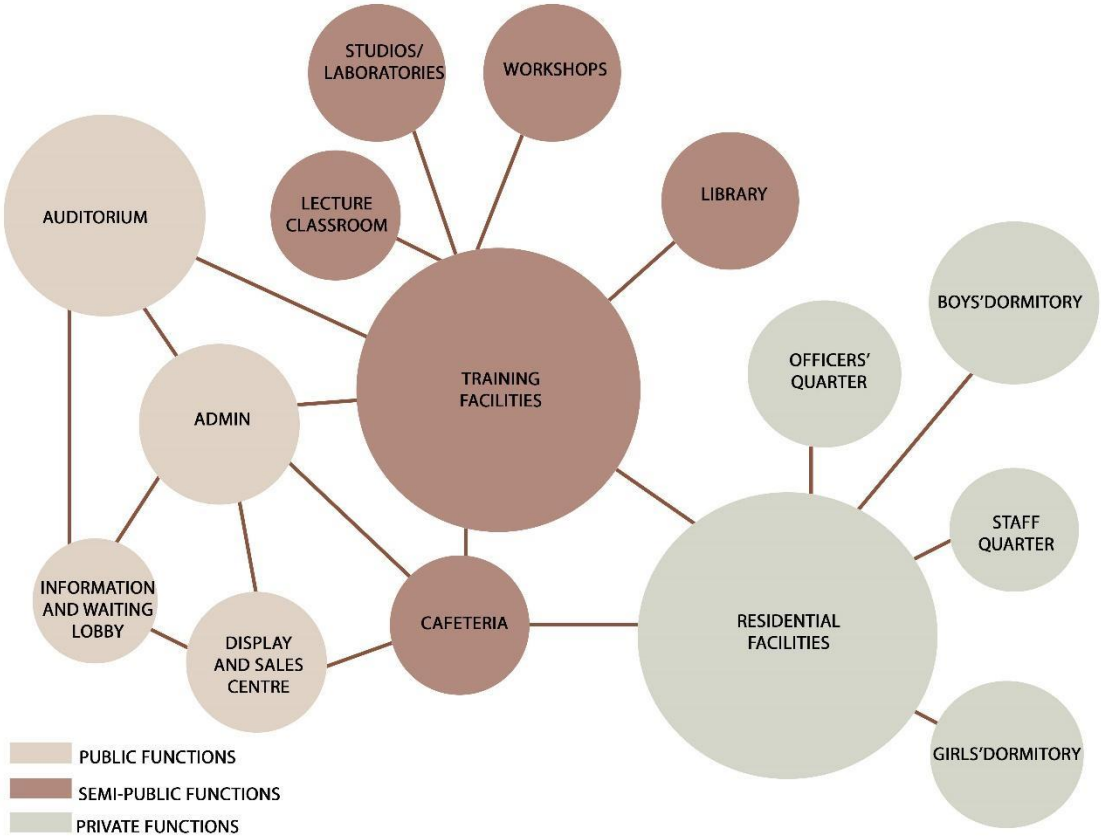


Figure 5.7: Functional relationship diagram (Source: Author)

Chapter 6: Design Considerations

The aim of the project is to develop a space which will help the trainees enhance their skill development. Besides, the built and natural environment has to be organised in such a way that it would be environmentally responsive and ensure comfort to its user. Since, the youths of this country is one of the biggest driving forces and the number of the dropped back youth is also alarming, the training centre needs to ensure the accommodation of the modern amenities so that the youth can enhance their skill properly. Moreover, since the training centre provides both residential and non-residential courses, therefore, it requires an environment where both the facilities are complementary to each other. Considering these factors and the studies of the previous chapters the design considerations are developed.

6.1 Social interaction for effective learning

From the previous studies and literature reviews, it is already known that the interactive spaces help the learning become more efficient. Besides, in this project, there will be both residential and non-residential trainees. Therefore, to make them socialise more and have a healthy learning environment it is required to have spaces where they can share their learning experiences and inspire each other.

6.2 Passive energy strategies

The climate of the region is hot humid. Therefore, energy consumption might get higher for ensuring the thermal comfort of the users. Besides, some of the classes such as tailoring, crafting need bright light to illuminate the work space. Moreover, although the rainy season has got enough precipitation yet the dry season for example the month of December and January have got the least percentage of precipitation which means more energy consumption

will be done during the dry season to ensure water supply. On the other hand, to make the building more climate responsive and ensure sustainability it is required to consume the least amount of energy and passive energy strategy can help consume less energy. Rain water harvesting and ground water recharge, use solar energy and ensure maximum use of daylight can cut down cost on electricity consumption. Besides, the site surrounding provides free air flow and that can be incorporated in the design and have natural ventilation in places where air flow is not needed to be controlled.

6.3 Preserving existing vegetation

From the analysis of existing site condition, it can be seen that the site has its major vegetation along with the site boundary. Since the site is adjacent to the Dhaka-ChapaiNawabganj highway, the existing trees can not only create a noise buffer from the road but make space for wildlife. Moreover, the tree boundaries also separate the public and private zone within the site. Furthermore, green is a source of relaxation. The lush green environment can bring a positive impact on the users.

Chapter 7: Design Suggestions

This chapter includes the conceptual development and final design outcome following the design considerations and the analysis from the earlier chapters.

7.1 Concept development and massing

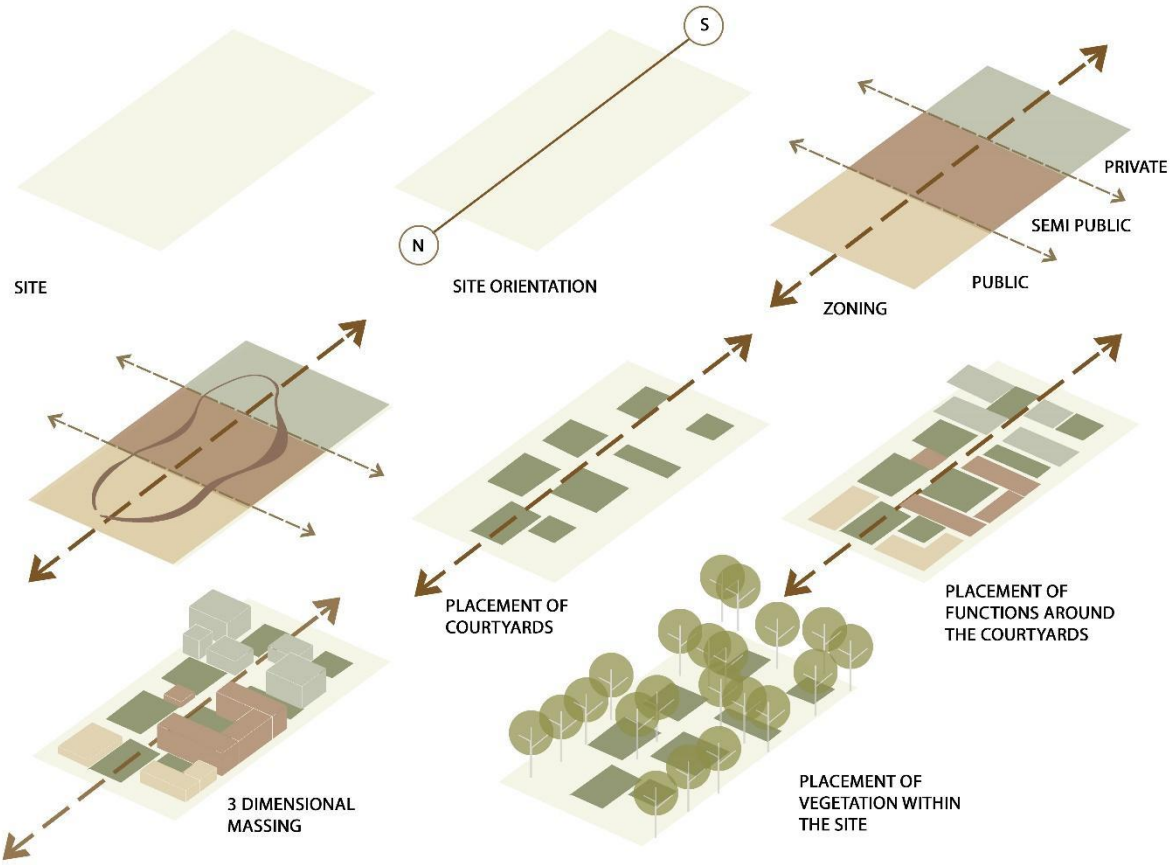


Figure 7.1: Placement of functions (Source: Author)

Following the design consideration mentioned in chapter six, the main idea was to create an environmentally responsive learning environment with a free flowing space that guides the user throughout the site. First of all, the site was divided into three basic zones and different sized courtyards were placed along the main axis. Subsequently, the functions were placed around the courtyards. The courtyards here were designed to not only serve environmental purposes but it is used as a place for interaction, separate different zones and used as an open workshop and space for horticulture. Finally, along with preserving the existing vegetation as much as possible, plantation of various types of trees as a privacy barrier for the private zone and a source of relaxation.

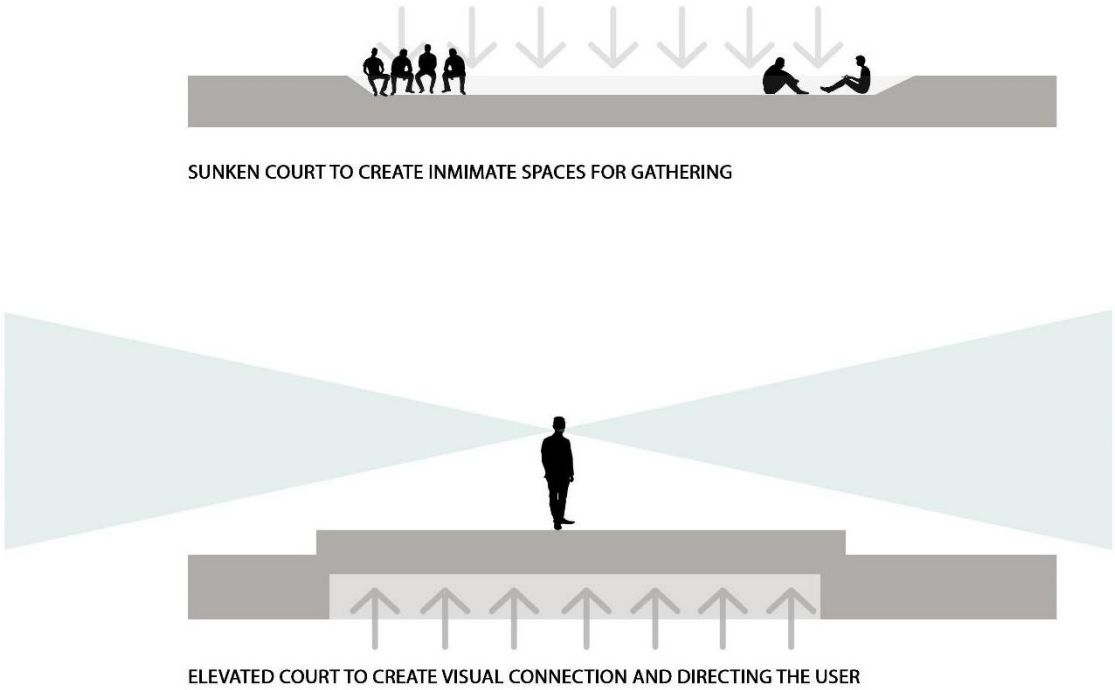


Figure 7.2: Different uses of courtyards (Source: Author)

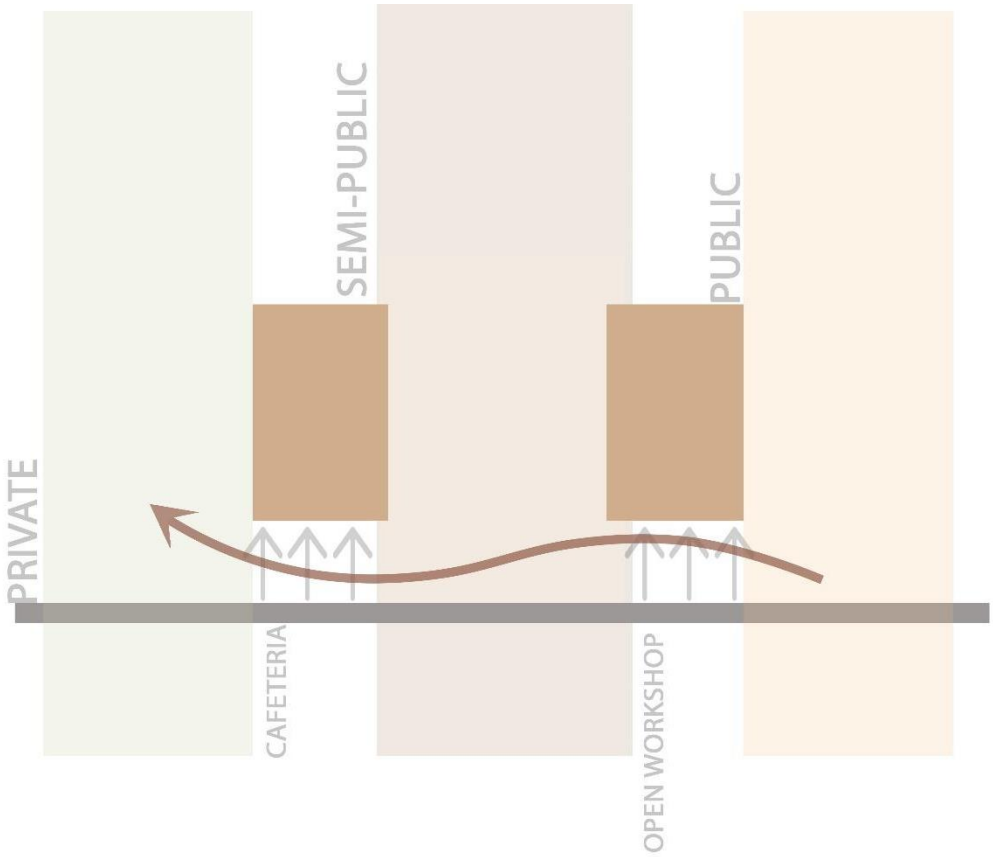


Figure 7.3: Uplifted mass as functional threshold (Source: Author)

7.2 Floor plans and blow ups

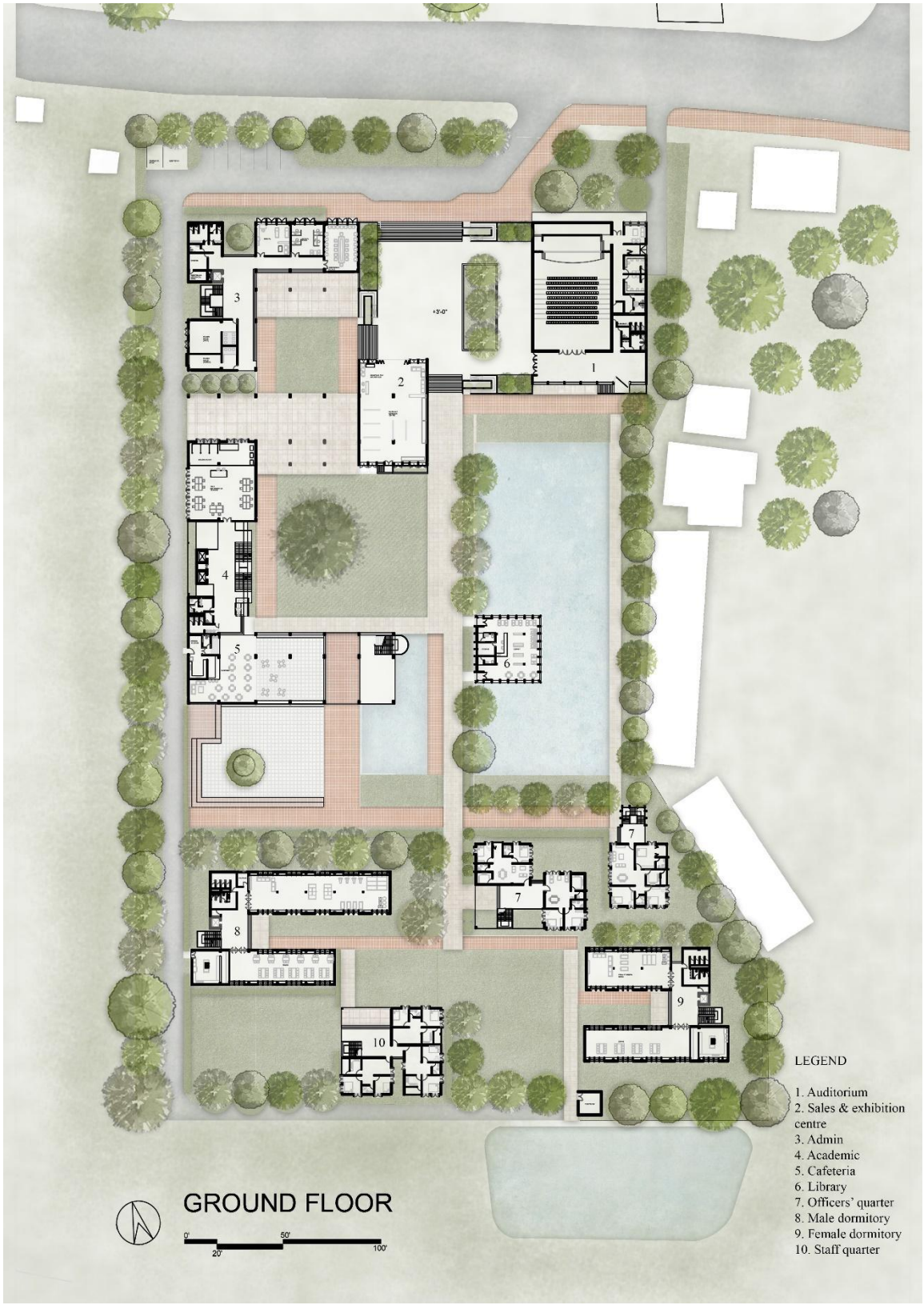


Figure 7.4: Ground floor plan (Source: Author)

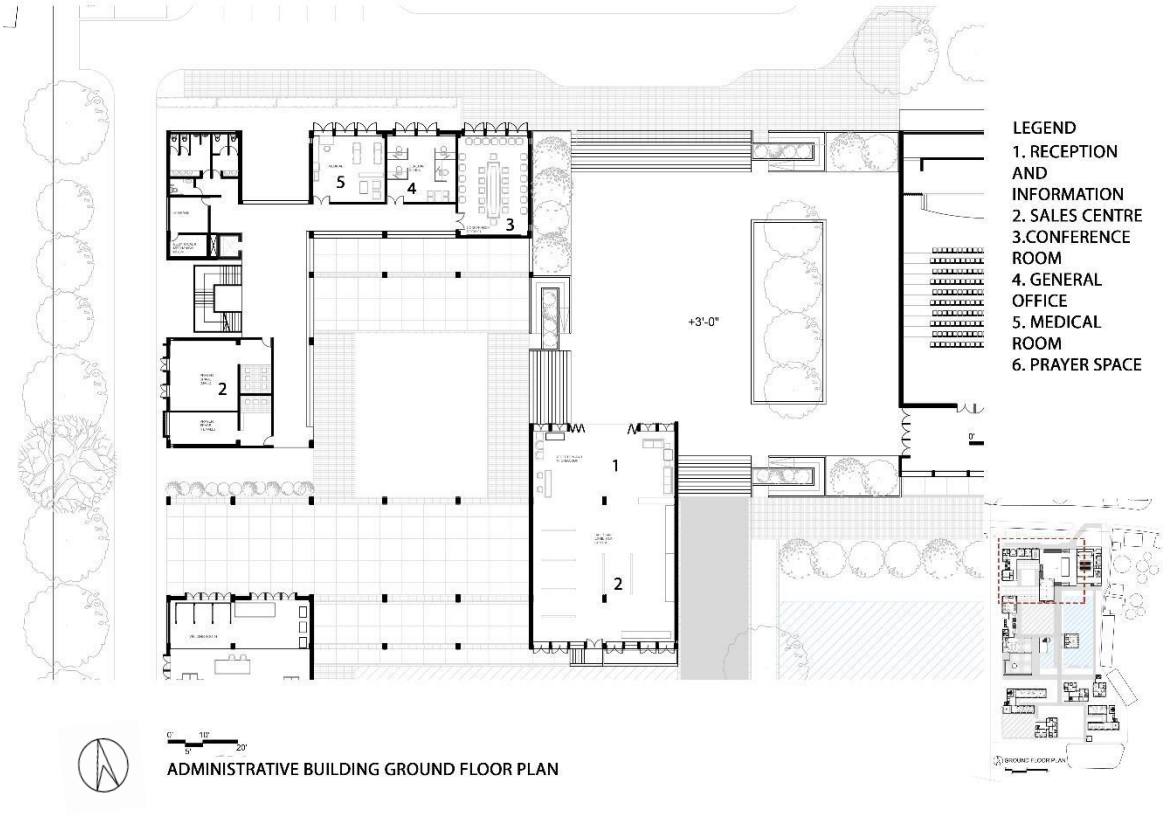
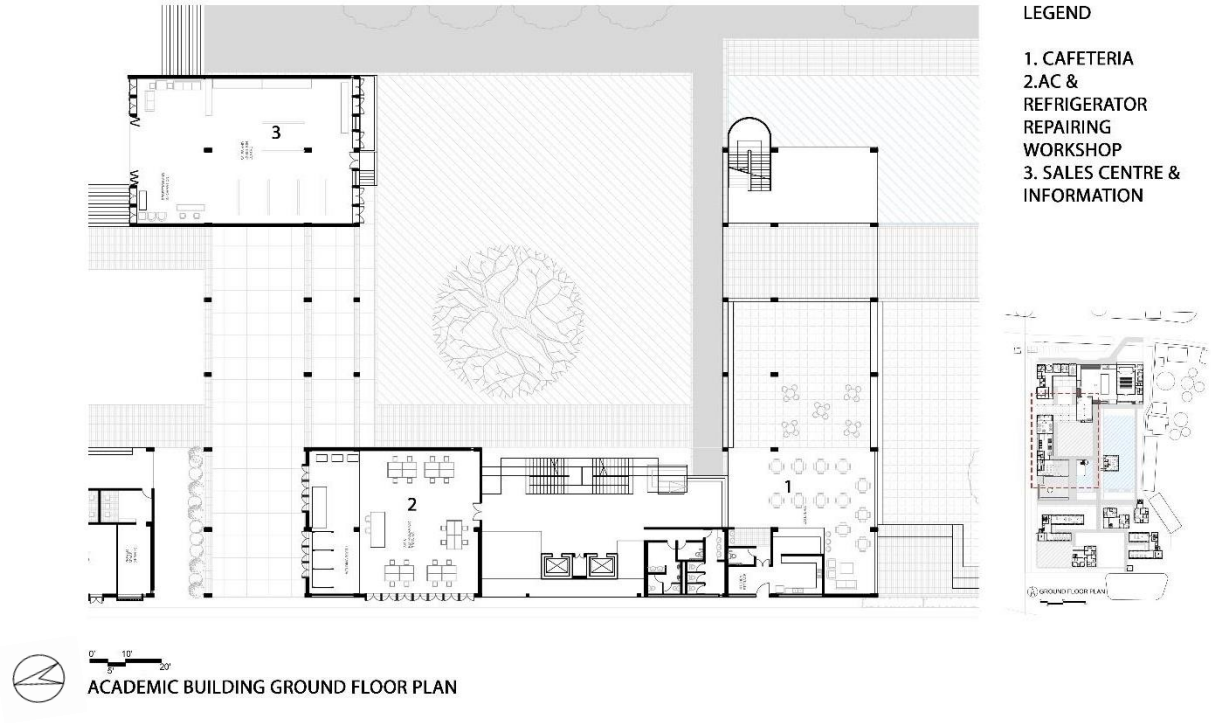


Figure 7.5: Administrative building floor plan blow ups (Source: Author)



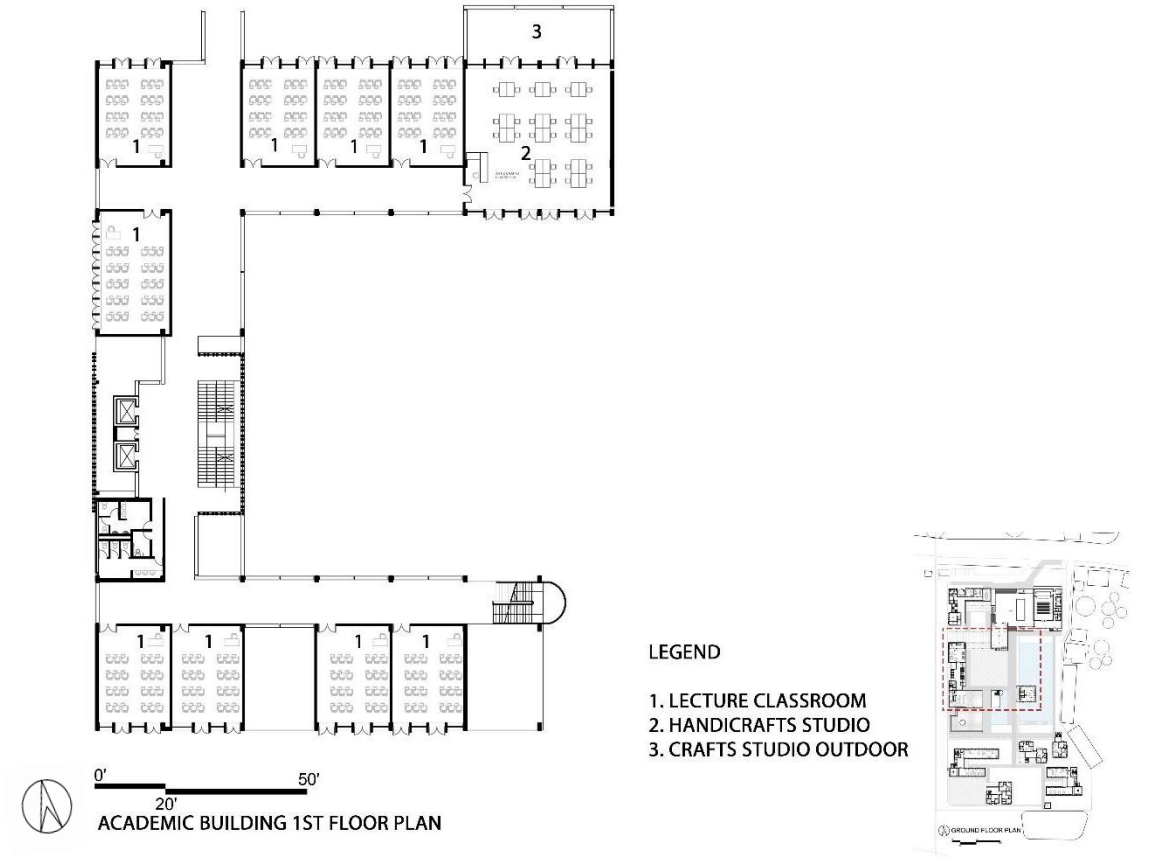
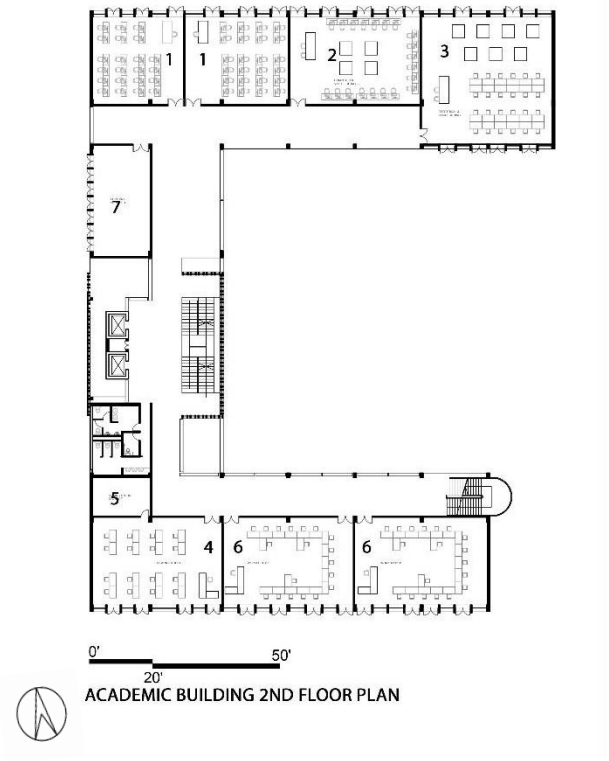


Figure 7.6: Academic building floor plan blow ups (Source: Author)



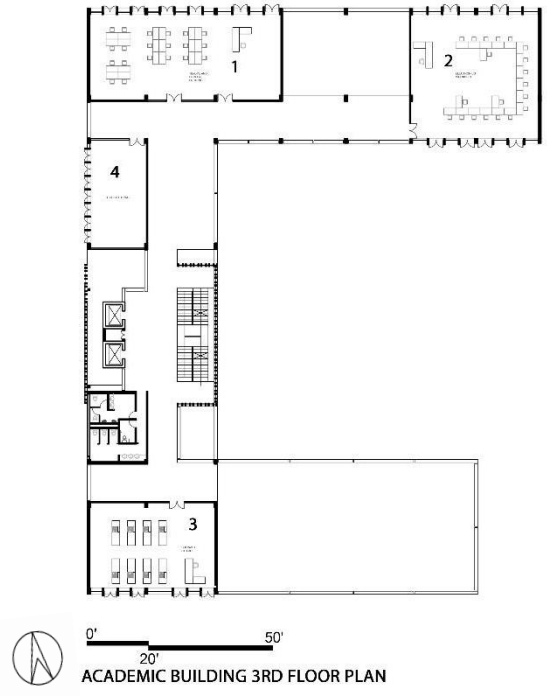


Figure 7.6: Academic building floor plan blow ups (Source: Author)

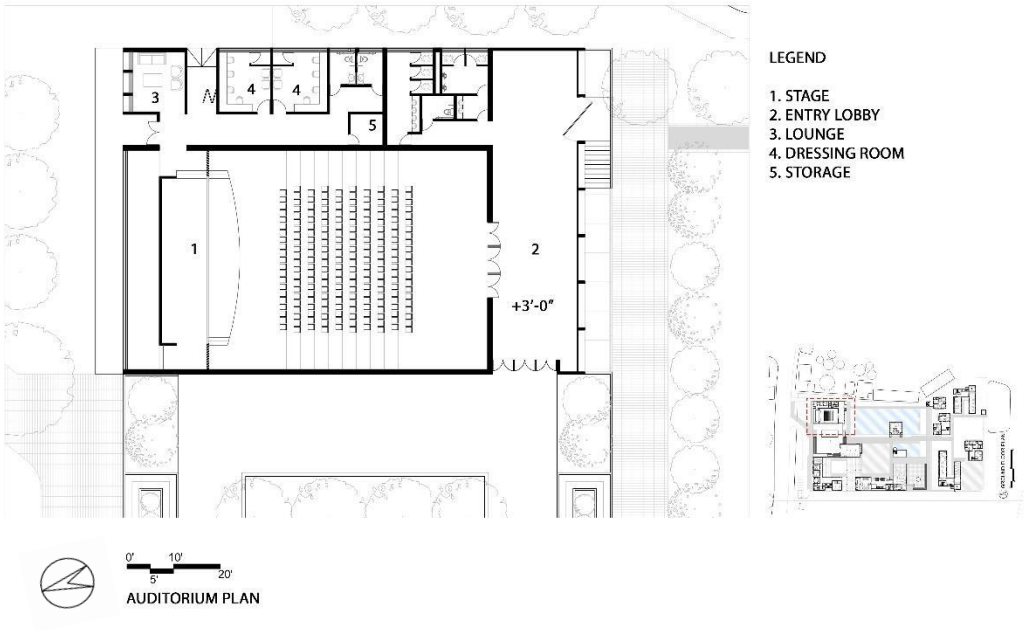
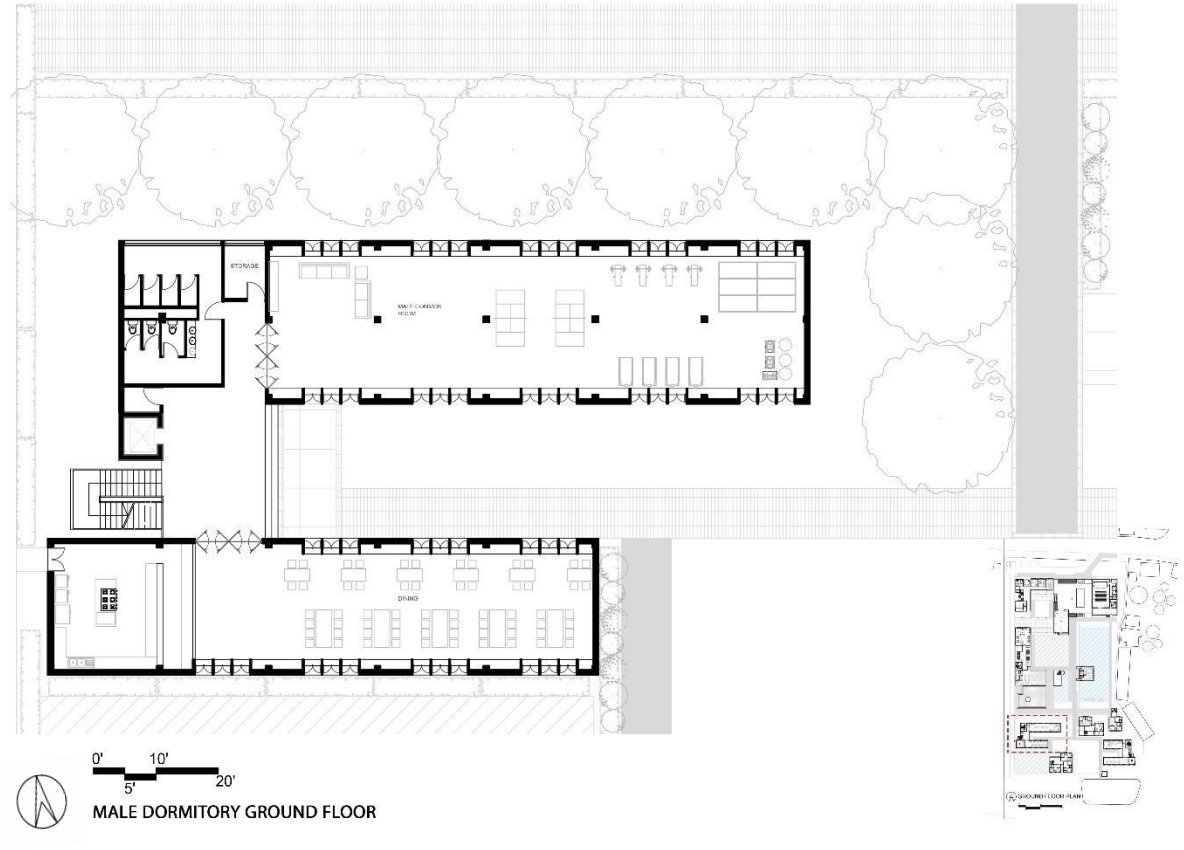


Figure 7.7: Auditorium plan blow up (Source: Author)



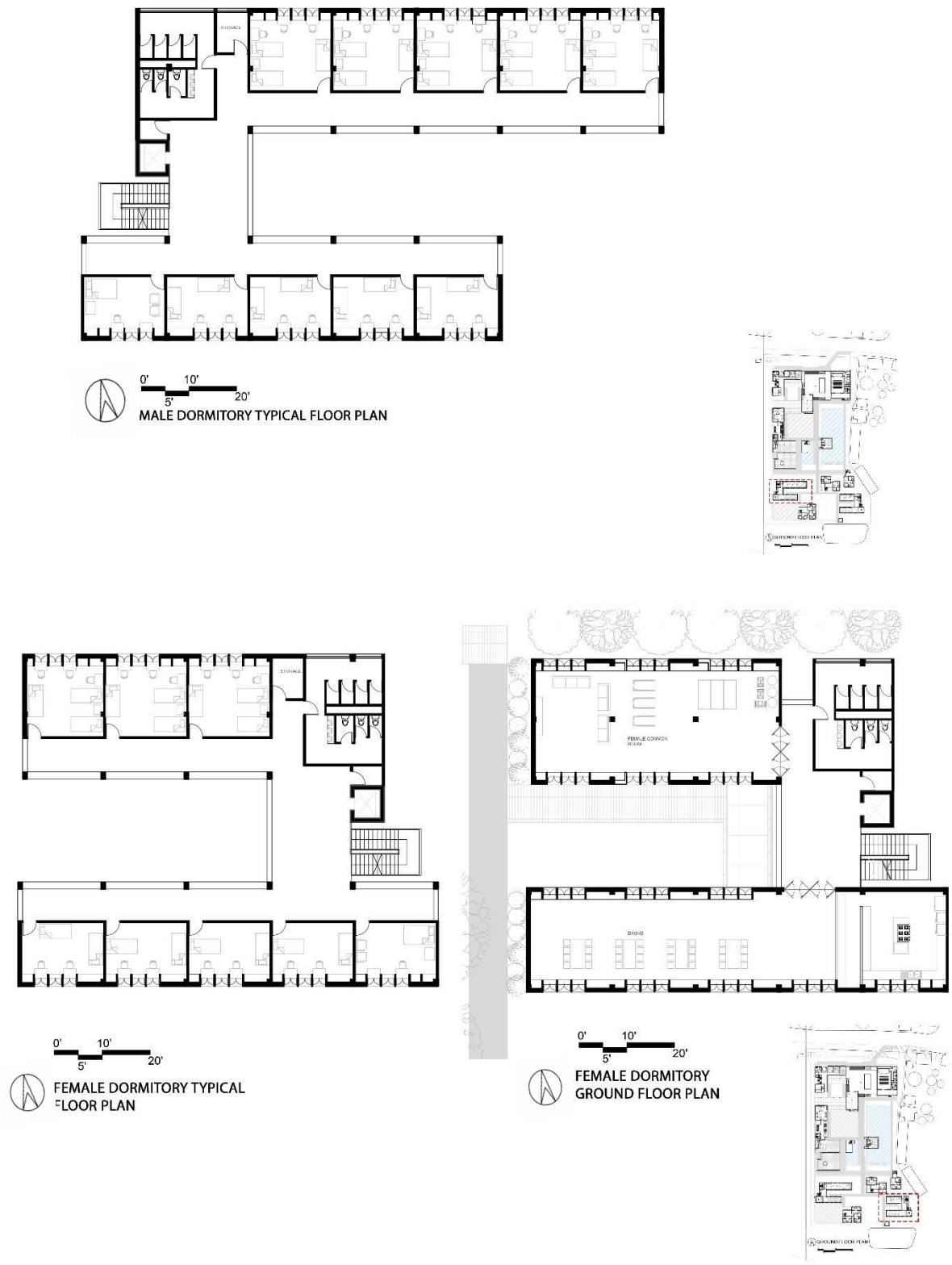
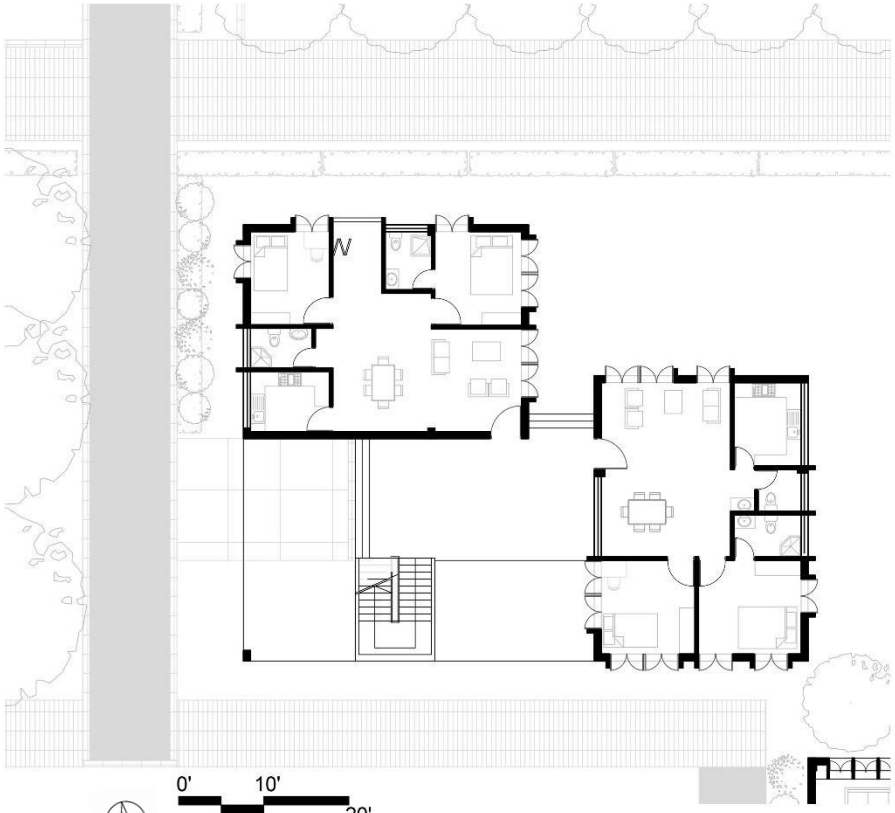
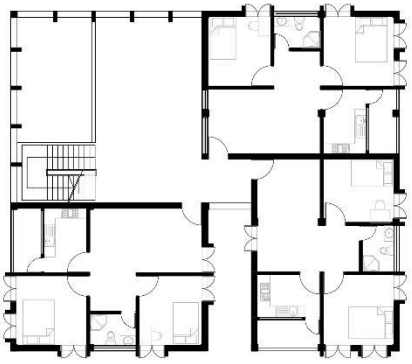


Figure 7.8: Dormitory floor plan blow ups (Source: Author)



OFFICERS' QUARTER GROUND FLOOR PLAN



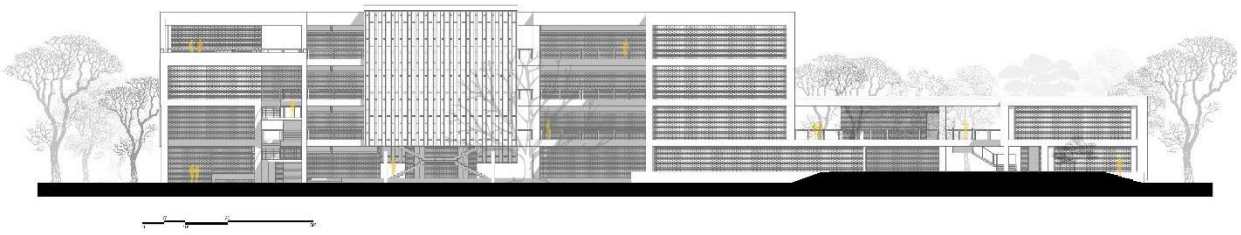
STAFF QUARTER 1ST FLOOR PLAN

STAFF QUARTER GROUND FLOOR PLAN

Figure 7.9: Quarters floor plan blow ups (Source: Author)

7.3 Elevations

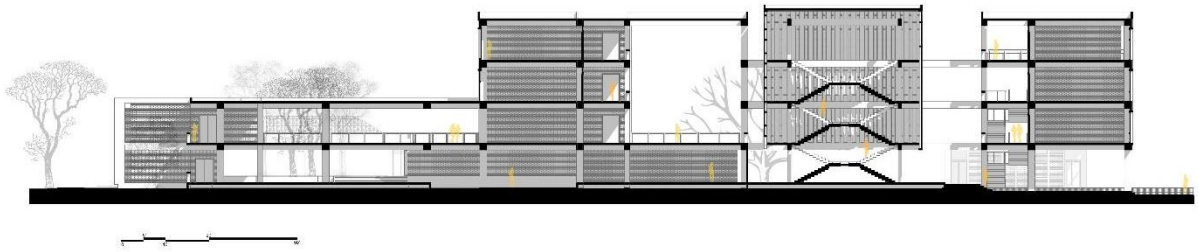
North Elevation



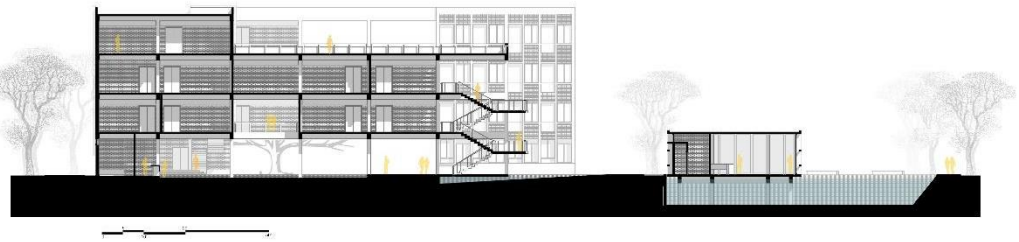
East elevation

Figure 7.10: Elevations (Source: Author)

7.4 Sections



Section AA’



Section CC’

Section BB’

Figure 7.11: Sections (Source: Author)

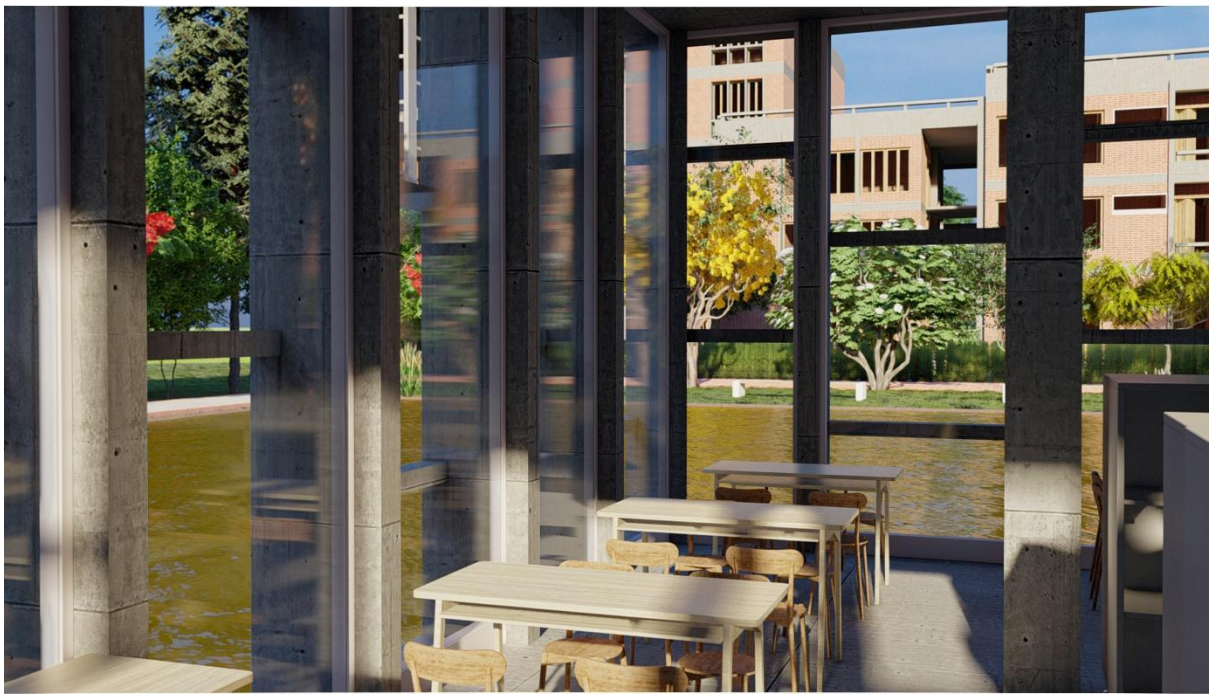
7.5 Rendered images

View towards the academic building courtyard

Display and sales centre

Sunken courtyard and cafeteria

View of the library and waterbody



View from the library

View towards the residential blocks from cafeteria

Aerial view of the project

Figure 7.12: Rendered images (Source: Author)

References

[1] Mahmood, M., & Akhter, S. (2011). International briefing 24: training and development in Bangladesh. *International Journal of Training and Development*, *15*(4), 306–321.

[2] *Vocational education | Britannica*. (n.d.). https://www.britannica.com/topic/vocational-education

[3] Hossain, M. I., Bari, N., Miah, S. U., Jahan, C. S., & Rahaman, M. F. (2019). MAR Technique to Reverse the Declining Trend of Groundwater Level in Barind Area, NW, Bangladesh. *Journal of Water Resource and Protection*, *11*(06), 748–757.

[4] Khan, M. S. H., Hasan, M., & Rabbani, K. M. M. G. (2017). Current trends and issues in TVET of Bangladesh. In *Technical Education and Vocational Training in Developing Nations* (pp. 128–150).

[5] *Certifications Courses for Professionals in Bangladesh - Invensis Learning*. (n.d.). Retrieved February 13, 2020,

[6] *Brochure Bang*. (n.d.)..

[7] *UNESCO-UNEVOC*. (n.d.).

Retrieved February 13, 2020, from https://unevoc.unesco.org/go.php?q=on-the-job+training&context=

[8] *Godagari climate: Average Temperature, weather by month, Godagari weather averages - Climate-Data.org*. (n.d.).

Retrieved February 20, 2020, from https://en.climate-data.org/asia/bangladesh/rajshahi-division/godagari-969511/

[9] Taylor-Foster, J., & Brittain-Catlin, T. (2017). *From Pastel Pink to Pastel Blue: Why Colorful Architecture is Nothing New*. https://www.archdaily.com/875235/herningsholm-vocational-school-cf-moller

[10] *Gehua Youth and Cultural Center by OPEN Architecture - Architizer*. (n.d.). Retrieved January 11, 2021, from https://architizer.com/projects/gehua-youth-and-cultural-center/

[11] *Training and Development: Training Methods, Benefits of Training*. (n.d.). https://www.toppr.com/guides/business-management-and-entrepreneurship/human-resource-management/training-and-development/