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Bangladesh Survey and Settlement Training Academy
Savar, Bangladesh

By

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

Department of Architecture
BRAC University

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Declaration

It is hereby declared that

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Approval

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Abstract

Bangladesh Survey and Settlement Training Academy is proposed to be built in Kabirpur, Savar. It is an initiative towards digitalization of land record system in Bangladesh.

This project collectively attempts to provide the basic necessary facilities needed for a training academy to provide its trainees with the utmost knowledge they wish to gain. Over the past years, methods of training and usage of equipment has evolved which needs to be addressed as well as arranged according to the user perspective. This digital means of record will certainly minimize the land disputes and help in improvement of land reforms.

Keywords: Training academy; Land Survey; Digital land record; Ecological pattern; Skill development.

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Chapter 1: Introduction

1.1 Introduction to the Project

An anticipated advancement in the training division of the Land Records and Survey Department managed by the Bangladesh Ministry of Land is the project "Bangladesh Survey and Settlement Training Academy." The initiative is anticipated to contribute to the conservation and wise use of the earth's finite resources. The Bangladesh Digital Survey (BD Survey) updates outdated data collected around the nation to replace outdated records. Prior to that, a training session is provided to officers of the Bangladesh Judicial Service, Police Cadre, Forest Cadre, and Civil Service Administration to help them better comprehend the components and enhance their expertise. The Government of Bangladesh will support this project, which will put an emphasis on better internal training facilities and deal with the shortage of trained labor for the Prime Minister's bold goal to create a Digital Bangladesh.

1.2 Aim and objectives of the Project

The aim of the project is to build an advance training academy with all the amenities such classroom, library, laboratories, required accommodations for trainees etc. The advancement of Land records and Survey Department towards digital survey techniques requires improved training facilities to cope up with the competency including supporting infrastructure and equipment. Currently, the training course organized by the Department of Land Records and Survey (DLRS), is being held at the Officers Training Institute near Savar. Trainees stay in tents and carry out field training during the day for the first one month. Later, they are dispersed to different zonal settlement offices for practical training. Therefore, this training academy to be constructed will promote sustainable development and make efficient use of resources as well as management in order to receive maximum benefit and user satisfaction.

1.3 Project Summary

Name of the Project: Bangladesh Survey and Settlement training academy

Implementer of the Project: Ministry of Land

Location: Kabirpur, Savar, Dhaka

Site Area: 7.6 acre

Proposed built area: 85,775 sqft

Proposed program list of the project:

- **Academic block**
 - Multipurpose hall
 - Classroom
 - Manual survey equipment room
 - Digital survey equipment room
 - Geography information service room
 - Mini museum
 - Library

- **Dormitory**
 - Trainees accommodation
 - Dining space

- **Elementary school**
 - Classroom
 - Teacher's room
 - Principal's room

- **Residential building**
 - Administrative staff accommodation

1.4 Project rationale

Several surveys were carried out in Bangladesh during the British era, the Cadastral Survey being the most prominent (CS Survey). The State Acquisition Survey (SA Survey) and the Revisional Survey (RS Survey), which were essentially revisions of the SA Survey, were later the other important surveys carried out during the Pakistani period, according to the statement. Following Bangladesh's independence, the most prominent surveys include the Bangladesh Survey (BS Survey), Diyara Survey, and Dhaka City Survey (City Survey). Through the Bangladesh Digital BD Survey, the data from earlier surveys conducted around Bangladesh will now be updated. In this situation, a manual hand survey is unable to provide an accurate map. because there are several flaws and limits with tapes and chains. The Bangladeshi digital survey is helpful in this regard. Also, many properties are created from multiple divisions of a much bigger piece over the course of years. With every additional division, the chance of mistakes can increase. The result is also connected properties not coinciding with adjacent parcels, resulting in gaps and overlaps. Thus, modern equipment or techniques which are accurately determinant needs to be incorporated in the training facilities, demanding an improved sustainable development in the training sector to encourage and develop the basic knowledge of upcoming trainees.

Chapter 2: Literature review

2.1 Definition and significance of training center

Training is “the organized procedure by which people learn knowledge and/or skill for a definite purpose” (Beach,2010). Training incorporates the process of engaging in teaching and learning activities with the primary goal of assisting members of an organization in acquiring and applying the knowledge, skills, abilities, and attitudes necessary for a certain job and organization.

2.2 Land Survey Record (LSR)

A land survey is a thorough account of land. In other words, it is the science of precisely determining a point's position on the ground or in three dimensions, and consequently the distances and angles between them; practiced by licensed surveyors and members of other building professions. These points are normally located on the surface of the earth, and they are frequently used to create land maps and set boundaries for ownership, locations, or other civil law or administrative needs. Initially, the land survey requires a certified/licensed surveyor to research the designated land considering all the previous information and gather new findings to prepare an updated official report or record which can be used for an individual or a company in the future. During the process, several advanced machines and equipment are used to obtain the required details of the land.

2.3 The importance of Land Survey System

Everyone benefits from keeping track of their assets in order to manage them and promote healthy growth. All industries use standardization, activity, management systems, and after an activity, storing and processing data immediately make mistake sources efficiently reduced. The limits must be clearly marked on the bottom so that anybody standing on or close to the property may see them. Furthermore, a measurement of a land measurement is intended to give

to generate the documentation that the title underwriter needs in order to eliminate set customary exceptions to coverage. Numerous properties have significant problems with inappropriate bonding, errors in previous surveys, titles, easements, and life crossings. Additionally, throughout the period of years, many characteristics are formed from various divisions of a larger component, and the likelihood of error increases with each additional division. As a result, there can be gaps and overlaps caused by neighboring properties not matching up with adjacent parcels.

2.4 Objective of Bangladesh Survey and Settlement Academy

According to Azad (2017), the major goals of digitizing land management are to provide quick, user-friendly assistance to service seekers and create a sensible land use plan at all pertinent levels. It would be a massive undertaking to create an Upazila-level web-based land information system and issue legally valid Certificates of Land Ownership (CLO). As per the research, the problems associated with digitalization cannot be solved without strong political commitment at the highest levels and complete expertise. Real consequences of technological and human development must be properly evaluated, and reforms must be appropriately adjusted in the appropriate context.

Therefore, this training centre seek to enhance the digital training facilities, develop necessary skills to serve and execute various rural-urban land development.

2.5 Standards of Training centers

The National Institute of Building Science's WBDG (Whole Building Design Guide) states that adult professional training facilities should offer flexible and technologically sophisticated learning spaces that are safe, healthy, pleasant, visually beautiful, and accessible. It is a basic requirement to accommodate the training program's unique space and equipment requirements. At some training facilities, schedules and programs are frequently variable. During training,

various and evolving training methods are discovered. The architecture of the facility must thus be flexible if an ongoing training program is to succeed.

It is easier for students to study and develop their skills when the environment is conducive to good acoustics, suitable lighting, day lighting, clear sightlines, comfort and aesthetics, thermal comfort, and ventilation.

Chapter 3: Context Study

The site is located in Kabirpur, Savar. Savar is an Upzila of Dhaka district. Kabirpur is under Shimulia Union of Savar. Dhaka Export Processing Zone run by Bangladesh Export Processing Zone Authority (BEPZA) is in Savar.

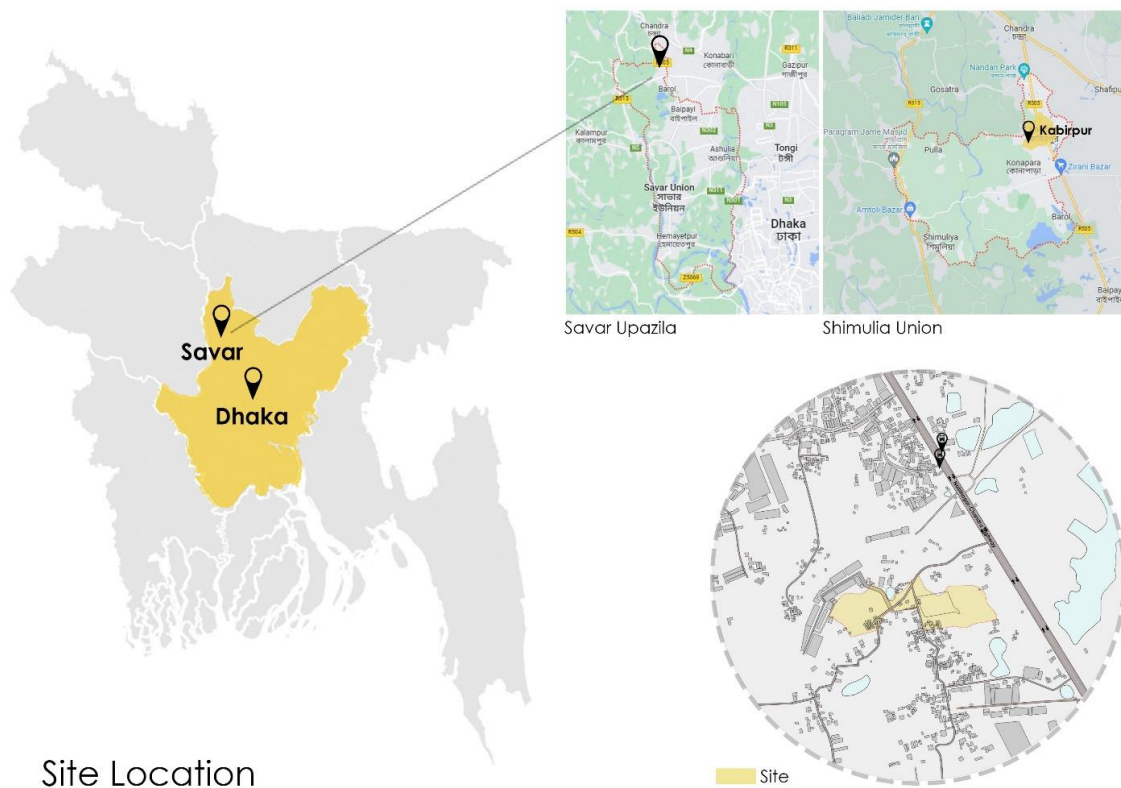


Figure 1 Site location in map

(Source: Author)

3.1 Site surroundings

The site is in Kabirpur, Savar which is on the northwest of Dhaka city. There is an adjacent Nabinagar-Chandra highway to the east side of the site. The neighborhood has a thorough combination of purposes, ranging from industrial buildings to religious structures. The main access road is from the highway on the east side. There is a factory on the west side of the site and contains residential buildings on the south.



Figure 2 Site surroundings

(Source: Google, modified by author)

Although there are factories, businesses, and commercial structures on the periphery of the area, residential buildings predominate there. Within 1km is the Zirani Bazar which caters the surrounding people with necessities varying from raw vegetables to grocery, electronics etc. The Zirani bazar lies on the intersection point of Zirani-Kashimpur road and Nabinagar-Chandra highway.

3.2 Historical development of site

The site for Survey and Settlement training has been mostly accommodating heavy foliage which increased throughout the years. The site's surroundings have evolved with time as new industries, industrial buildings, and residential structures have been built. More people migrated as opportunities escalated through industry sector.

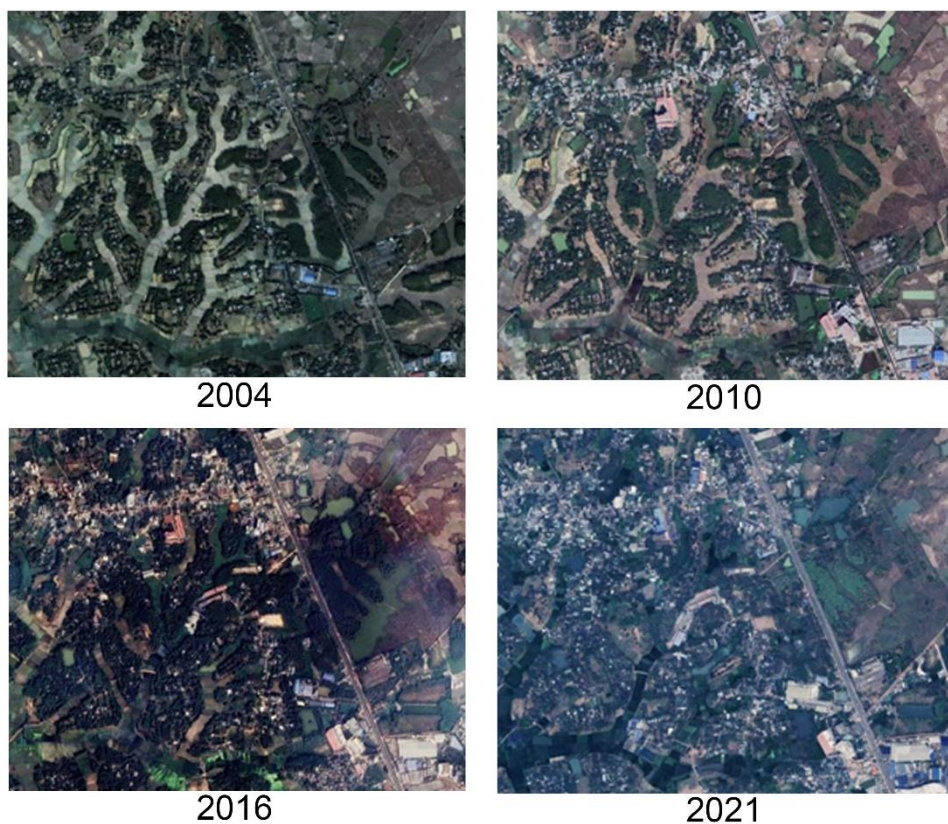


Figure 3: Chronological development of site surrounding

(Source: Google Earth)

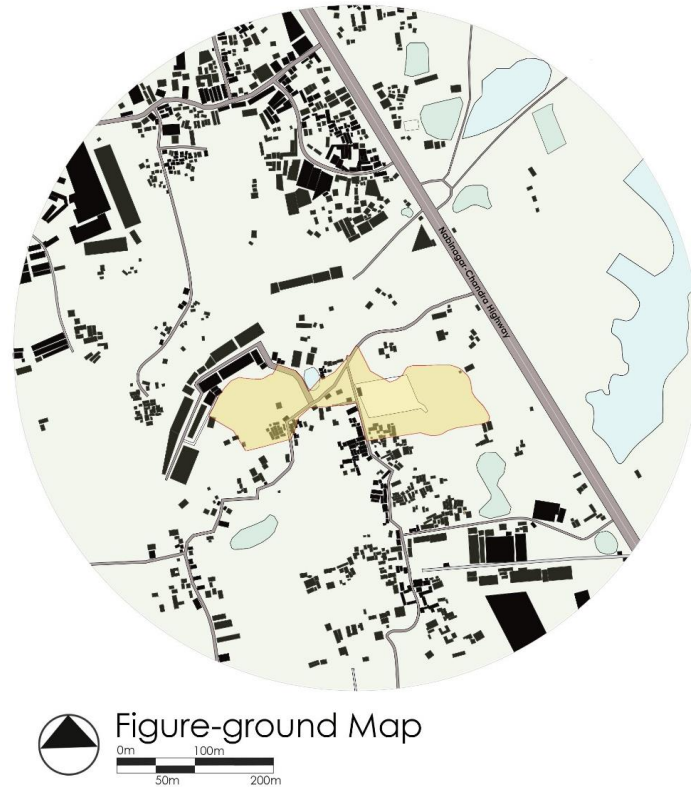


Figure 4: Figure-ground map

(Source: Author)

3.3 Demographics Study

There were 1,387,426 people living in Savar Upazila as per the 2011 census in Bangladesh. 54.20% of the population was male, and 45.80% was female. 319 of the population, including the Buno, Garo, Chakma (Sangma), and Burman. Agriculture accounts for 24.34 percent of all jobs, followed by agricultural laborer at 12.8 percent, wage laborer at 4.4 percent, cattle breeding, forestry, and fishing at 1.90 percent, industry at 1.37%, commerce at 17.35%, service at 20.68%, construction at 1.6 percent, transport at 3.9 percent, and others at 11.4 percent.

Population

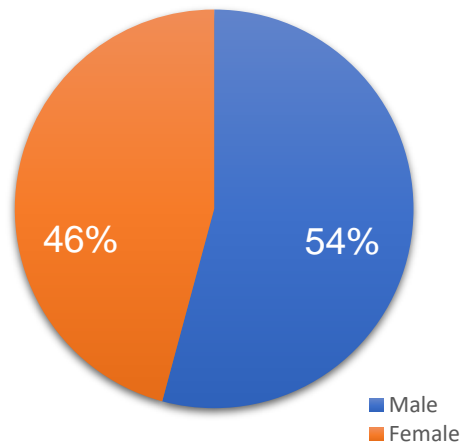


Figure 5: Population Percentage

(Source: Population & Housing Census-2011)

3.4 Land-use Pattern of the Surroundings

Most of the buildings around the site are industrial or residential, with a few social or commercial facilities sporadically scattered throughout the landscape.

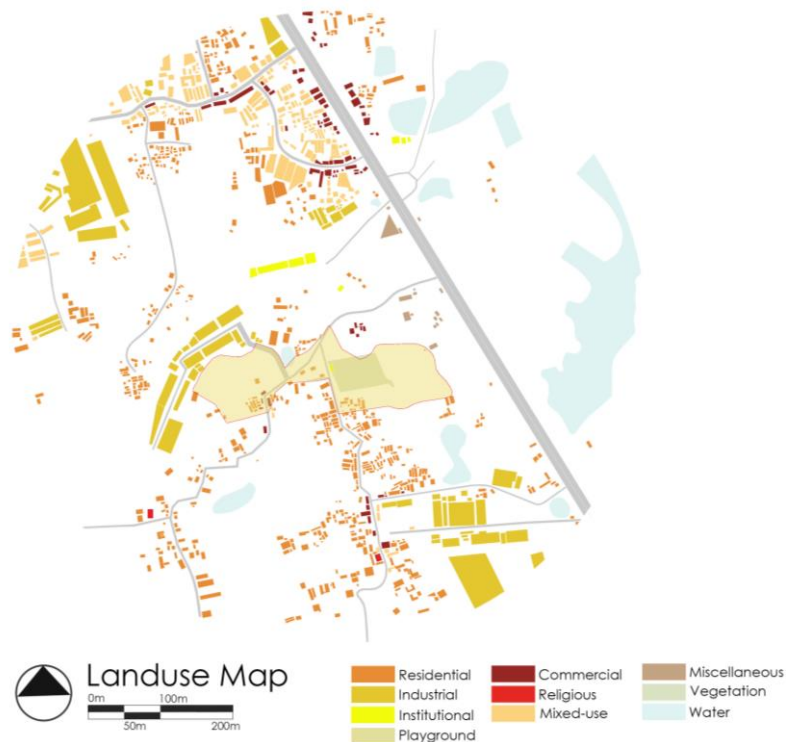


Figure 6: Land use map

(Source: Author)

3.5 Accessibility and Connectivity

The site has its main entrance on the Nabinagar-Chandra highway, which is easily accessible and visible to the people. The access road passes right through the site, with secondary roads joining it in the mid-way. Multiple factories, companies and institutions are scattered throughout the site surroundings. So, cargos, long route buses, truck etc are commonly seen on the highway. Every night hundreds of trucks bring goods to the factories, markets and bazaar nearby. Moreover, workers and residents use various types of transports to access the site area such as private cars, three wheelers, bikes, local tom-tom etc. For buses, the site is 115m away from Kabirpur bus stop, 1km away from Zirani bus stop.

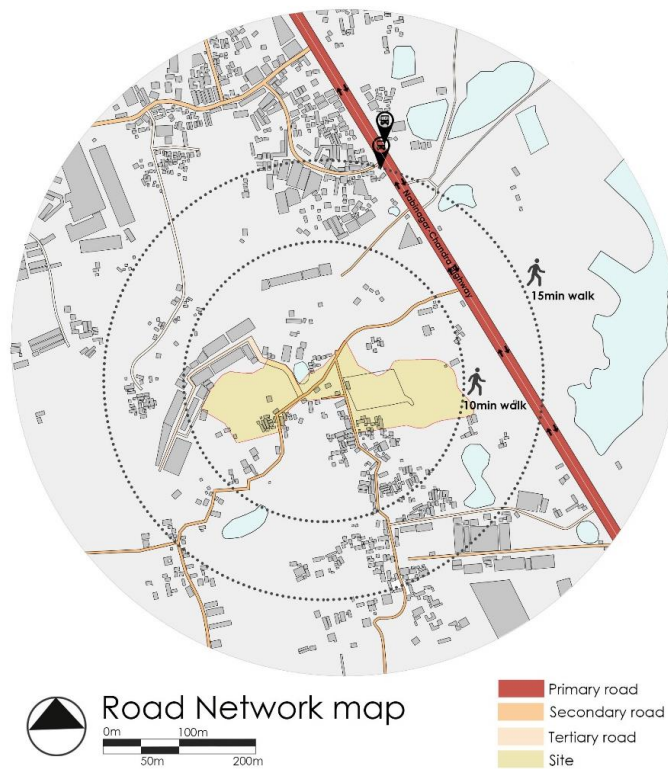


Figure 7: Road network map

(Source: Author)

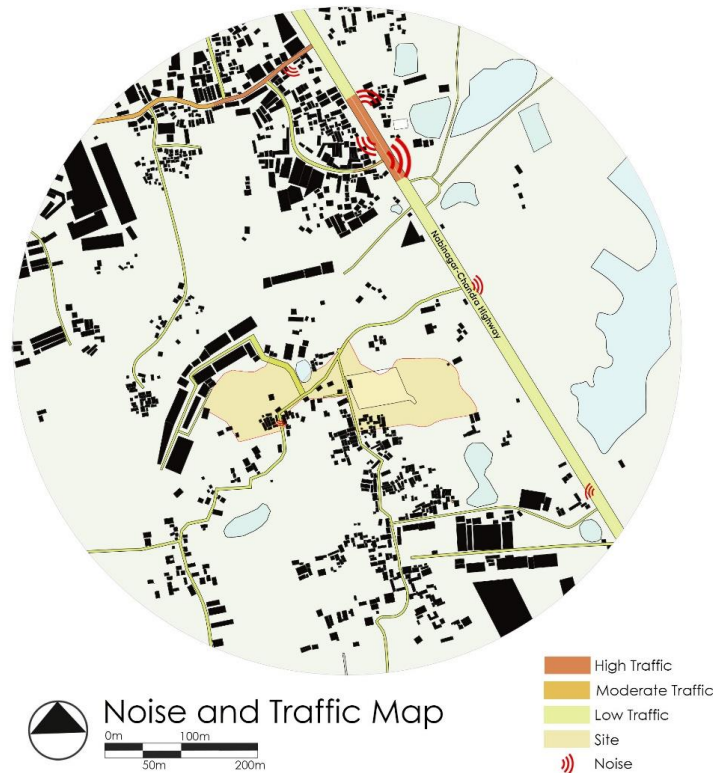


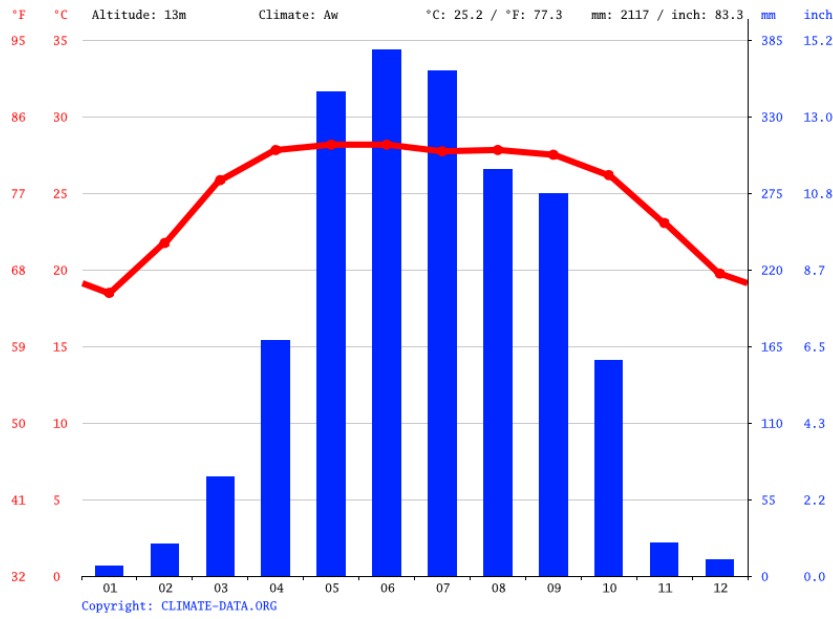
Figure 8: Noise and traffic map

(Source: Author)

The Nabinagar-Chandra roadway and nodes see the most traffic congestion on the busy, fast-moving motorway. As one moves away from the highway, the noise level significantly decreases. The noise level is highest close to the highway.

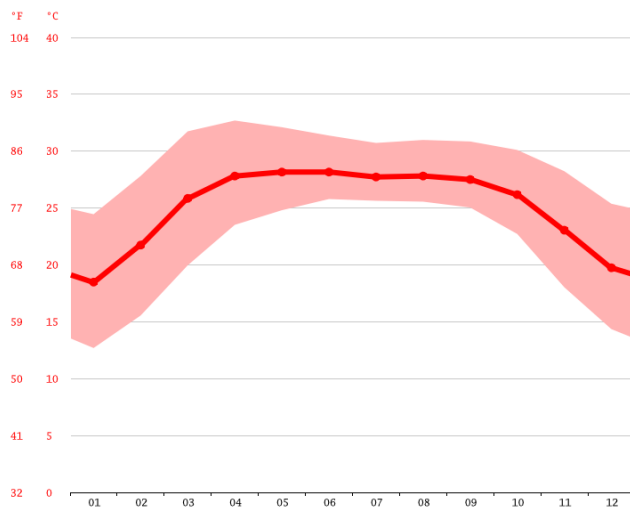
3.6 Climatic Conditions

The weather in Savar is categorized as tropical. Rainfall in winter is significantly lower than in summer. July has the greatest relative humidity of any month (85.32 percent). March has the lowest relative humidity of any month (58.70 percent). Savar experiences an average temperature of 25.2 °C or 77.3 °F. Every year there is around 2117 mm (83.3 inches) of precipitation.



The driest month is January with only 7mm of precipitation. The highest precipitation is in June, which is 378mm.

Figure 9: Figure: Climate graph of Savar (Source:<https://en.climatedata.org/asia/bangladesh/dhakadivision/savar-123710>)



January is the coldest month with an average temperature of 18.5°C. Whereas May and June are the warmest month with an average of 28.2°C.

Figure 10: Average Temperature Savar (Source:<https://en.climate-data.org/asia/bangladesh/dhaka-division/savar-123710/>)

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	18.5 °C (65.3) °F	21.7 °C (71.1) °F	25.8 °C (78.5) °F	27.8 °C (82.1) °F	28.2 °C (82.7) °F	28.2 °C (82.7) °F	27.7 °C (81.9) °F	27.8 °C (82.1) °F	27.5 °C (81.5) °F	26.2 °C (79.1) °F	23 °C (73.5) °F	19.7 °C (67.5) °F
Min. Temperature °C (°F)	12.7 °C (54.8) °F	15.6 °C (60) °F	20 °C (67.9) °F	23.5 °C (74.3) °F	24.8 °C (76.7) °F	25.8 °C (78.4) °F	25.6 °C (78.1) °F	25.6 °C (78) °F	25 °C (77.1) °F	22.7 °C (72.9) °F	18 °C (64.5) °F	14.4 °C (57.8) °F
Max. Temperature °C (°F)	24.5 °C (76) °F	27.8 °C (82.1) °F	31.7 °C (89.1) °F	32.7 °C (90.8) °F	32.1 °C (89.8) °F	31.4 °C (88.5) °F	30.7 °C (87.3) °F	31 °C (87.8) °F	30.9 °C (87.5) °F	30.1 °C (86.2) °F	28.2 °C (82.8) °F	25.4 °C (77.7) °F
Precipitation / Rainfall mm (in)	7 (0)	23 (0)	71 (2)	169 (6)	348 (13)	378 (14)	363 (14)	292 (11)	275 (10)	155 (6)	24 (0)	12 (0)
Humidity(%)	67%	61%	59%	74%	81%	85%	85%	85%	85%	82%	72%	69%
Rainy days (d)	1	2	5	11	16	19	21	21	19	11	2	1
avg. Sun hours (hours)	8.7	9.4	9.5	8.2	7.3	6.7	6.7	7.1	7.2	8.0	8.5	8.1

Figure 11: Weather Average Savar (Source: <https://en.climate-data.org/asia/bangladesh/dhaka-division/savar-123710/>)

Micro-climate:

In contrast to the hot and crowded surroundings, the location offers a special sense of protection and security due to its abundance of trees and milder temperature.

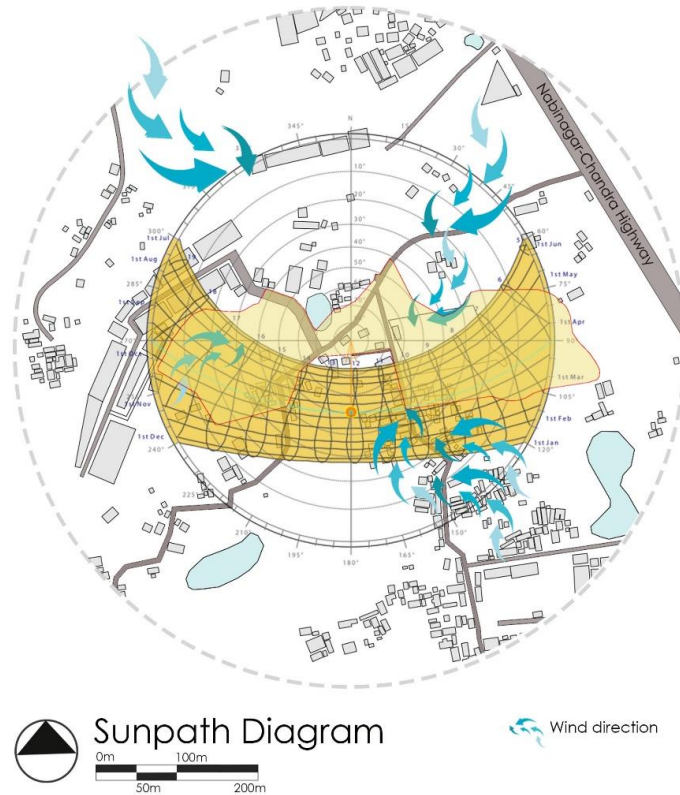


Figure 12: Sun path diagram

(Source: Author)

3.7 Socio-Cultural and Economic Contexts

Agriculture and manufacturing are the two major economic sectors in Savar. The main crops grown here are Paddy, Jute, peanut, onion, garlic, chili, and other vegetables. The extinct or nearly extinct crops in the region are Aus paddy, Asha Kumari paddy, sesame, linseed, kali mator, randhuni saj, mitha saj, kaun, and mas kalai. The main fruits cultivated here are Jackfruit, mango, olive, papaya, guava, kamranga, berry, and banana. There are 181 combined fisheries, dairies, poultries, five hatcheries, 209 poultries, and 1319 fisheries. Manufacturing facilities include Ceramic industry, beverage industry, press and publication, garments industry, foot ware, jute mills, textile mills, printing and dyeing factory, transformer industry, automobile industry, biscuit and bread factory, pharmaceutical industry, soap factory, brickfield, cold storage, welding, plant nursery, etc. Bangladesh Export Processing Zone is located in this Upazila. The Cottage industry includes 8 Weaving, 100 goldsmith, and 29 others workshops. The main exports are Jackfruit, papaya, flower, sapling, dairy products, meat, transformer, fabrics, dye, medicine, ready-made garments, electronics and electric goods, shoe, brick, sweetmeat, etc.

3.8 Images of Existing Site Condition



Figure 13: Existing site condition images

(Source: Author)

Chapter 4: Case Study Appraisal

4.1 BRAC Training and Research Centre, Faridpur

Project name: BRAC Training and Research Centre

Project Location: Badarpur, Faridpur

Client: BRAC

Architect, Firm: JA Architects, Jalal Ahmed.

Project Year: 1991-1992

Site area: 5.5 acres

4.1.1 Environment and microclimate



Figure 14: Ground Floor Plan

(Source: Google)

Faridpur is a district, under the Dhaka division, situated in south central district of Bangladesh. The Padma River forms its north-eastern boundary. The average temperature is about 25 degree Celsius. Guided by the position of the site, the masses are placed on the northern and south eastern side of the site. The west side is treated with vegetation as a buffer from the main road and reduces the heat gain for this side.

The Training Centre is entirely built with locally found available material, brick and corrugated sheet. Different brick orientations are used to cut direct sun light and provide sufficient amount of diffused light to the surrounding as well as provide ventilation.



Figure 15: Corridor space

(Source: Google)

In addition, the long over-hang corrugated sheet provides shade to the buildings to keep them cooler.



Figure 16: Cluster of accommodation facility

(Source: Google)

4.1.2. User Behavior and Requirement

The houses in Faridpur follow a courtyard-based pattern which is imitated in this project. The people of the village are used to such arrangements. So, will the residents of the training centre get an idea of the village housing pattern while being at the centre themselves.



Figure 17: Internal Courtyard

(Source: Google)

To maintain the privacy and prevent any interruption, the staff quarter and dormitory are clustered separately in different zones. Common facilities such as dining, admin lounge, multipurpose hall is kept in the most accessible position which can be easily located by anyone.



Figure 18: Different zones in the site

(Source: Google, modified by Author)

4.1.3. Form and Functions:

The form of the buildings is inspired from the contextual housing pattern of the village. The buildings are clustered with courtyards and connected by horizontal corridors stretching from one cluster to another providing a semi outdoor space. The use of brick and corrugated sheet give it a very local outlook.

Coming to the form, the whole project follows a modular pattern, where the accommodation facilities are done in clusters.

4.1.4 Horizontal and Vertical Circulation

Circulation is an important part of a project which directs an individual around the whole site. In this project, the dormitory area is horizontally accessible to every cluster and has continued shaded corridor till the common facilities such as dining, classrooms, multipurpose etc. The corridors are placed around the courtyard.



Figure 19: Vertical and horizontal circulation space

(Source: Google)

For the dormitories, stair is placed at the front of the three bedrooms opening in the corridor. Whereas in the staff quarter, stair is placed in between two clusters to serve both at a time. There are no corridors to connect the staff quarter's clusters.

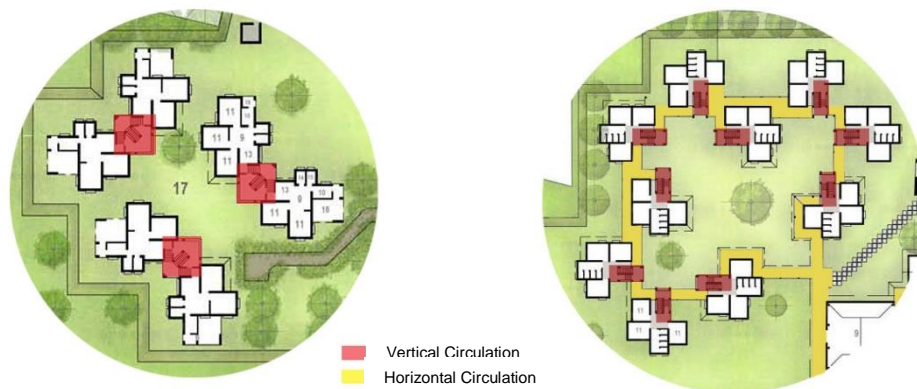


Figure 20: Position of vertical and horizontal connection

(Source: Google, modified by Author)

4.1.5. Site Planning and Landscape Designing

The site is planned respecting the existing condition. Unbuilt areas were undisturbed to maintain the natural condition of the site. The west façade of the building is secured from sun light through heavy foliage. A balance of water and green surface is also seen to be maintained through pond and greenery. Here the green boundary acts as a buffer from the surrounding as well. The green courtyards provide an opportunity to the residents to enjoy the environment within the training centre.

4.1.6 Conclusion

To conclude, the research centre is a smooth functioning place with all the amenities, maintaining an equilibrium with the function and nature. It's a perfect blend of built area and its surrounding working for human development.

4.2 Ashinaga Uganda Dormitory, Uganda

Project name: AU Dormitory

Project Location: Nansana, Uganda

Client: Ashinaga Uganda

Architecture Firm: Terrain Architects

Completion year: 2015

Site area: 2140 m², Built area: 1,316 m²



Figure 21: Aerial view of AU Dormitory

(Source: Google)

4.2.1 Environment and micro climate

The same approach as the locals were used in the design, who spent hot days outdoors in the shade and the breeze. Long walls were placed on the east and west sides to provide shade, and huge apertures were made on the north and south facades to let wind and light into the rooms.

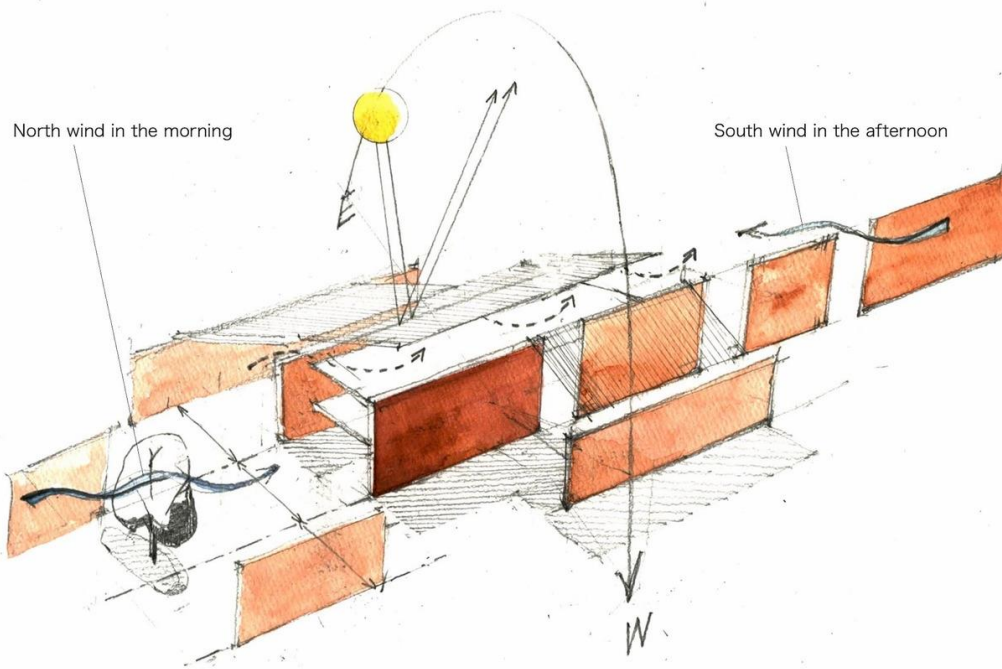


Figure 22: Climate sketch diagram

(Source: Arch daily)

4.2.2 User behavior and requirement

Here, 50 orphans are housed in this residential institution from various sub-Saharan African nations. The students become accustomed to coexisting with individuals from various cultural backgrounds and are ready to enroll in institutions overseas. The major difficulty in the confined location was maintaining a suitable spacing between quiet solo activities and group activities. Rooms that stand on opposite sides of a brick wall are divided, while those that share a space between the walls, known as a "bay," are joined. In addition to the span across, which is united, three "bays" are big enough for the entire town to congregate in.

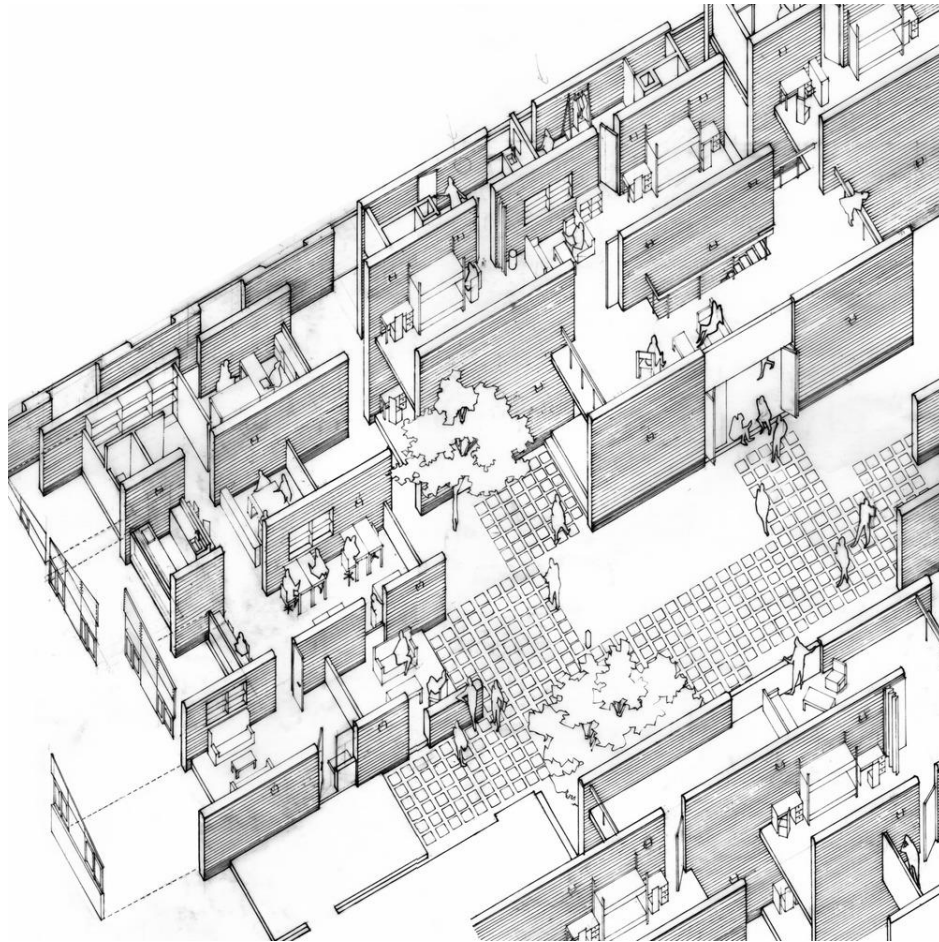


Figure 23: Partial Perspective view of AU Dormitory

(Source: Arch daily)

4.2.3 Construction

Local bricks, which are obtained in a few locations close to the building site, are one of its prominent building materials. In Uganda, well-burnt clay bricks are the primary building material, however due to their irregular forms and colors, they are typically coated with mortar and paint. In order to provide stunning hues, the bricks utilized in this project are exposed and appropriately supported by reinforced concrete pillars and beams. In addition to hardwood rafters and plywood ceilings, iron sheets are employed as roofing materials. This roof structure has been appropriately insulated to provide a comfortable and conducive environment for the users because of the area's high sea level, which makes it hot

during the day but freezing at night throughout the whole year.

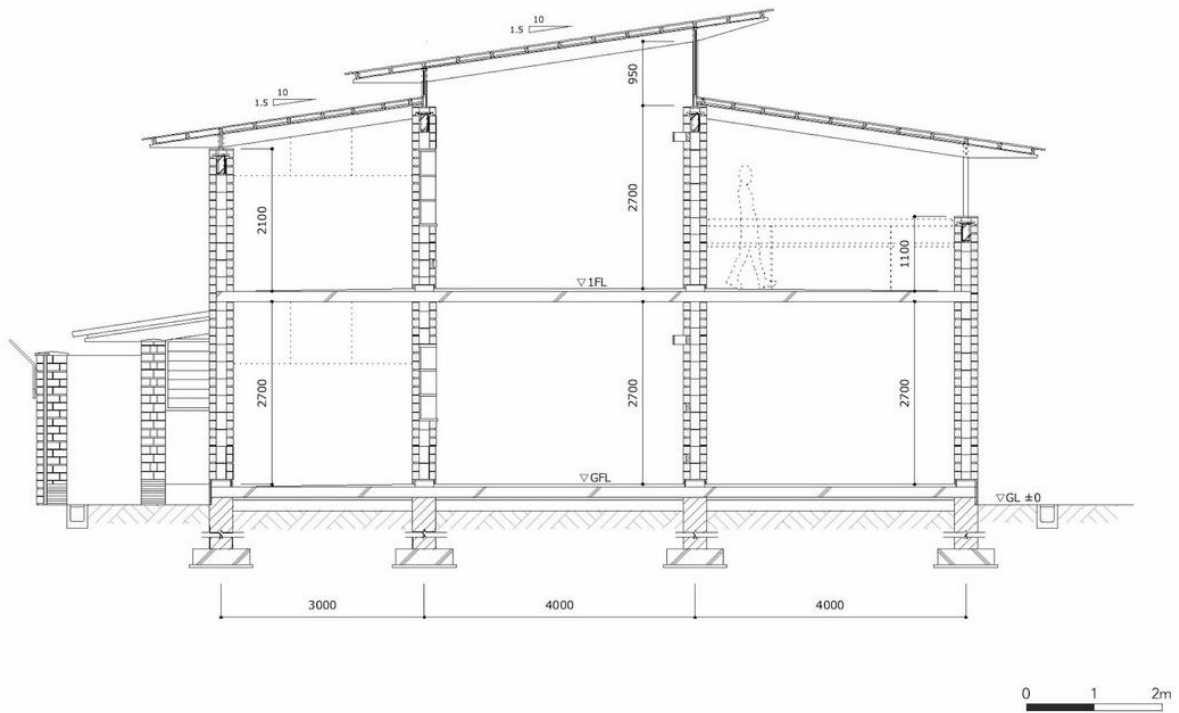


Figure 24: Section

(Source: Arch daily)

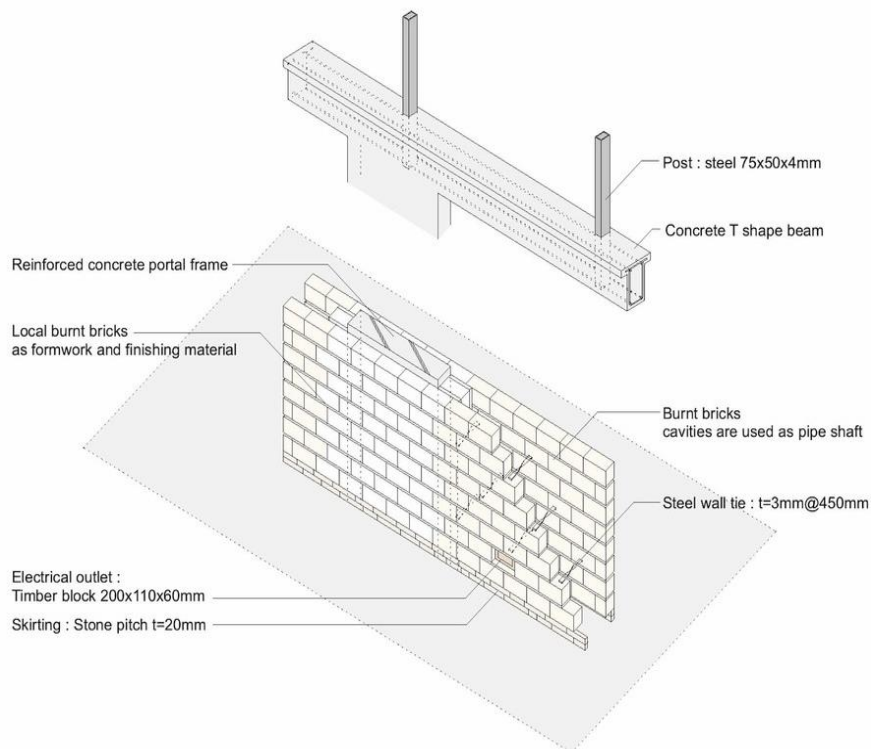


Figure 25: Wall detail

(Source: Arch daily)

4.2.4 Horizontal and Vertical Circulation

The building is designed to respond, simply, to the climate, with tall walls positioned East-West to maximize shade, and large openings facing South and North - that bring wind and light deep into the rooms. It comprised of classrooms, both male and female dormitories, staff quarters, a canteen, kitchen and also office for staff.



Figure 26: Horizontal and vertical circulation

(Source: Google, modified by Author)

- Vertical Circulation
- Horizontal Circulation

4.2.5 Site planning and landscape design

Even though the buildings are made in a tight site, there are generous amount of soak-able green surface. The courtyard is semi paved for the ease of movement from one building to another. Besides, large opening towards courtyard gives a nice frame of the greenery around.



Figure 27: Landscape image

(Source: Arch daily)

4.2.6 Conclusion

This particular project is studied to understand the arrangement of the dormitory and how the various functions connected to it are arranged even though the density of the project is small.

Chapter 5: Program Appraisal

5.1 Program Analysis

The client of this project is the Ministry of Land. A detailed program list of the project was approved after several amendments from the ministry.

After going through the functions, it was clearly understandable that the main facilities are training and accommodation. To serve these two facilities all other amenities are incorporated.

The programs can be categorized as follows:

- Training/skill development
- Residential
- Educational

Training/skill development block facilities

This block has the all the training or development facilities. The classrooms will each accommodate about 60-80 trainees. There are separate rooms for equipment storage to be used by trainees as they go through the learning process. They have access to a library where all the land survey laws, records, equipment usage guide etc. will be available to gain knowledge for them

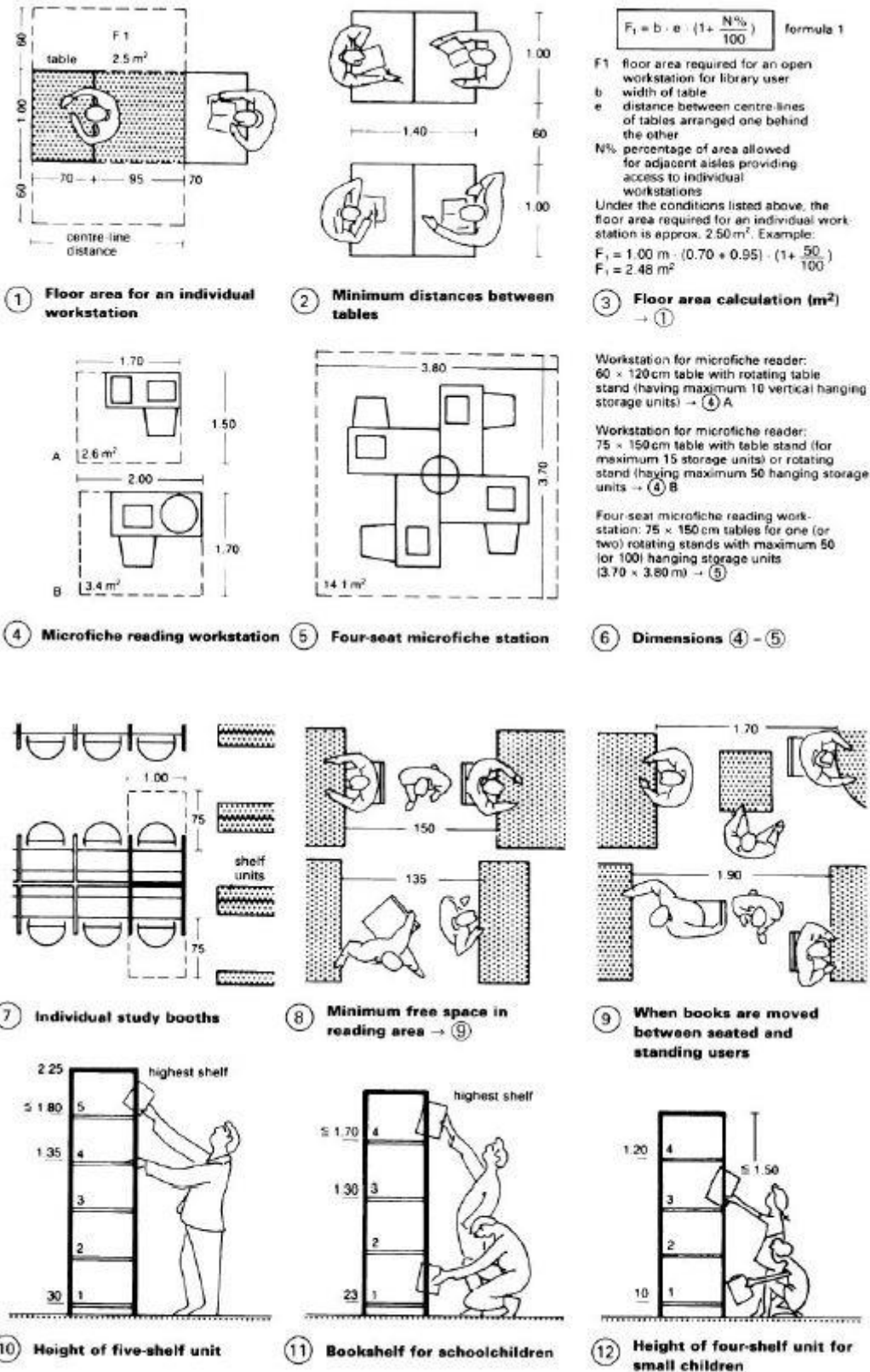


Figure 28: Figure: Library Standard Clearances

(Source: <https://www.slideshare.net/hamzaaaaaah/libraries-final>)

Residential block facilities

There are different blocks for staffs and trainees. Trainees have their dormitories with separate female and male accommodation. Whereas staffs get to live there with family in apartments of various sizes. The allocation of a staff depends on the pay scale. The highest paid staff is provided with the largest apartment option.



Figure 29: Hostel style dorm rooms

(Source: Pinterest)

Educational block facilities

There is an inclusion of an elementary school. A building with classrooms and teachers' room with basic facilities. The children of the officials or surrounding area are expected to get admitted here for their early education.

ELEMENTARY AND SECONDARY SCHOOLS
Classrooms

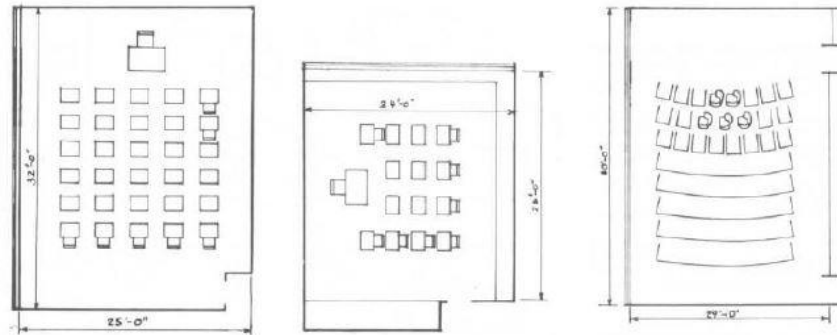


Figure 30: Typical Classroom Layouts

(Source: Chiara and Callendar, 1990)

5.2 Program Details

Academic facilities					
Functional Space	Number of units	Number of users per unit	Area per person (sqft)	Area per unit (sqft)	Total area (sqft)
Training Classroom	2	80	27	2160	4320
	2	60	27	1620	3240
Equipment room	1			640	640
GPS room	1			2300	2300
GIS room	1			2300	2300
Toilets	4	4	32.5	130	520
Exhibition space	1			1000	1000
Library					
Reception & Checkout	1			100	100
Stack area	1			900	900
Reading area	1	100	4.9	490	490
Storage	1			150	150
					1800

Multipurpose					
Main Lobby	1			1200	1200
Main Hall (with stage)	1	220	10.7	2360	2360
Change room	2			70	140
Storage	1			100	100
Toilets	2	6	32.5	195	390
					5200
Admin Room	2	8		250	500
Director's room with toilet	1	1		220	220
Visitors waiting room	1	30	5.3	160	160
Conference room	1	12	19	228	228
Security room	1			100	100
Total					21358
With Circulation 30%					27765

Table 1 Space requirement of Academic block

Staff Quarter facilities				
Staff Accommodation facilities				
Functional Space	Number of units	Number of users	Area per unit (sqft)	Total area (sqm)
Apartment	2		1500	3000
	2		1250	2500
	14		1000	14000
Common area	3		300	900
Total				20400
With Circulation 20%				24480

Table 2 Space requirement of Staff quarter block

Dormitory facilities					
Functional Space	Number of units	Number of users per unit	Area per person (sqft)	Area per unit (sqft)	Total area (sqft)
Entry	1			200	200
Trainee Bedroom (for 200 person)	50	4	62.5	250	12500
Dorm Tutor/Officers room	6	1		120	720
Common Toilet (including shower area)	5	4	51.7	103	515
Common area	3			300	900
Cafeteria					
Entry	1			100	100
Dining area	1	68	18	1230	1230
Serving Counter	1			200	200
Kitchen	1			500	500
Storage	1			100	100
Hand wash Area	1			100	100
					2800
Prayer Space	2	80	8	640	1280
Total					18345
With Circulation 30%					23848

Table 3 Space requirement of Dormitory block

Elementary school facilities					
Functional Space	Number of units	Number of users per unit	Area per person (sqft)	Area per unit (sqft)	Total area (sqft)
Lobby	1			300	300
Classroom	9	30	13.8	414	3726
Principal's room	1	1	-	200	200
Teacher's room	2	12	-	228	456
Toilet	6	3	32.5	97.5	585
Total					5267
With Circulation 30%					6847

Table 4 Space requirement of Elementary school block

Ancillary facilities					
Functional Space	Number of units	Number of users	Area per person (sqft)	Area per unit (sqft)	Total area (sqft)
Medical reception and nurse room	1	2	-	100	100
Doctors room	1		-	200	200
Resting room	1	2	-	200	200
Toilets	1	2	32.5	65	65
Departmental Store	2			200	400
Total					965
With Circulation 30%					1255

Table 5 Space requirement of ancillary facilities

Parking			
Functional Space	Number of vehicles	Area per vehicle (sqft)	Total area (sqft)
Car Parking	10	135	1350
Bike Parking	10	23	230
Total			1580

Table 6 Space requirement of parking

Functional space	Total area (sqft)
Academic Block	27,765
Dormitory	23,848
Elementary school facilities	6,847
Staff Quarter	24,480
Other facilities	1,255
Parking	1,580
Total Built Area	85,775

Table 7 Space requirement of total built area

Chapter 6: Design development

6.1 Concept

The training academy recognizes mostly the contextual factors in the site. Restoring the ecological pattern of the site was the main concept of the project along maintaining minimal intervention among the greenery. There has been a unique land pattern due to Dhaleshwari river flowing about 3km away from the site. This pattern disappeared over time as a result of land filling and unplanned construction. The project attempts to follow the same lines which once existed prominently during the year 2004 by connecting the existing scattered ones.



Figure 31: Ecological pattern of site surrounding

(Source: Google Earth, modified by Author)

There is an existing playground which serves the community around during Eid, funerals, sports competitions etc. According to the topographic map this land is the highest point compared to the surrounding hence it has been consistently there

for few decades. The project therefore keeps the playground intact contributing more to the activities happening.



Figure 32: Existing field and its activities

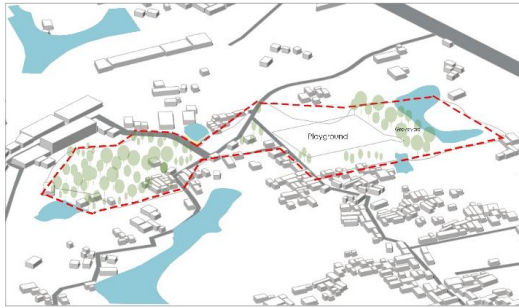
(Source: Author)

The site consists of mainly of Akashmoni and koro trees of varying ages. Upon inspection it was found that the periphery of the site has more younger trees looking at the trunk diameter. Thus, the project's-built space is made according to the empty spaces in between trees and cutting down the least number of younger trees possible.

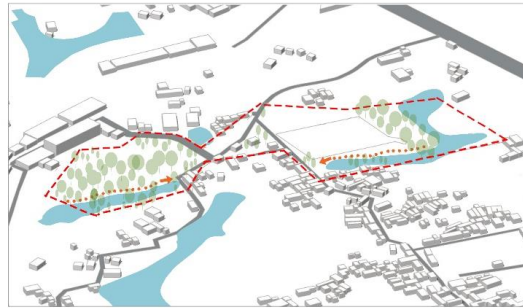
So, the main concept merges three things cumulatively-

- Restoring ecological pattern
- Preserving the older trees
- Maintaining the playground activities

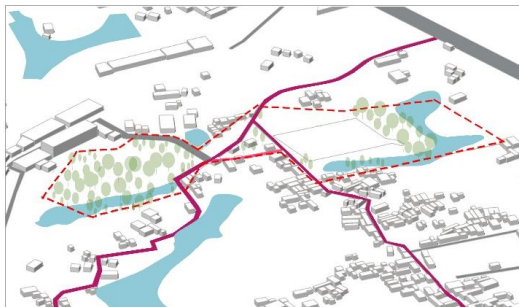
6.2 Form Derivation



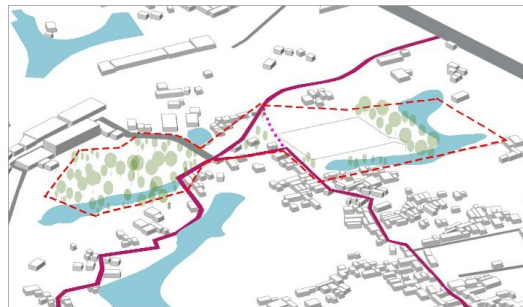
Existing site comprises of trees, an open field and temporary houses with scattered wet land around



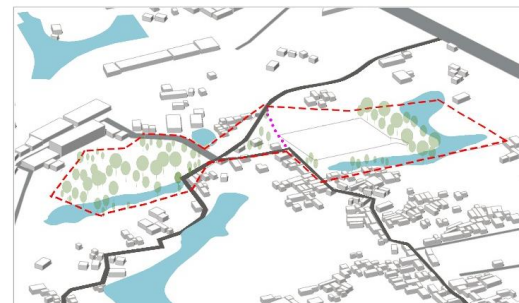
Connecting scattered wet lands following earlier patterns to create micro climate and restore natural land pattern.



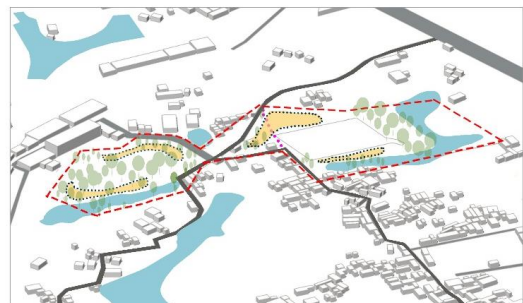
Existing main roads running through the site center dividing the site with a pedestrian way in the south.



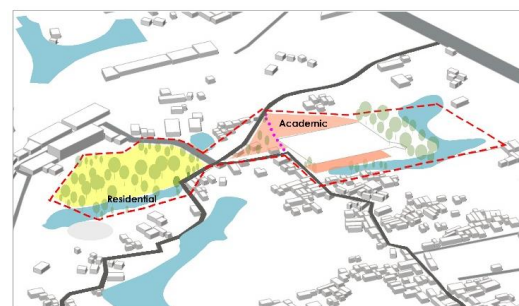
Proposing the pedestrian walk way direction to be used as a primary road and continuing the road from the highway as earlier. This will free up more space for the eastern portion of the site.



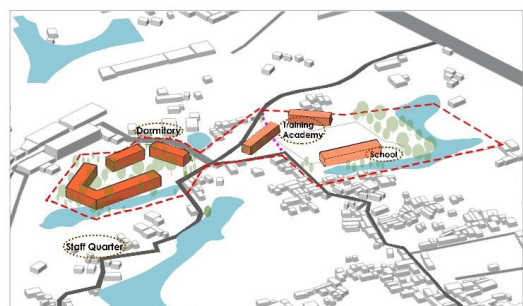
The existing green space mainly consists of limited varieties of trees. The trees on the periphery of the site line are comparatively younger to the ones in the middle.



Space for function placement is decided upon the position of less dense area with relatively younger or no trees.



More public function is arranged around the existing field and the accommodation is placed on the other side.



There are mainly two category of function consisting of accommodation and academic function places according to site respect.

Figure 33 Form generation diagram

(Source: Author)

6.3 Plans



Figure 34 Ground floor plan

(Source: Author)

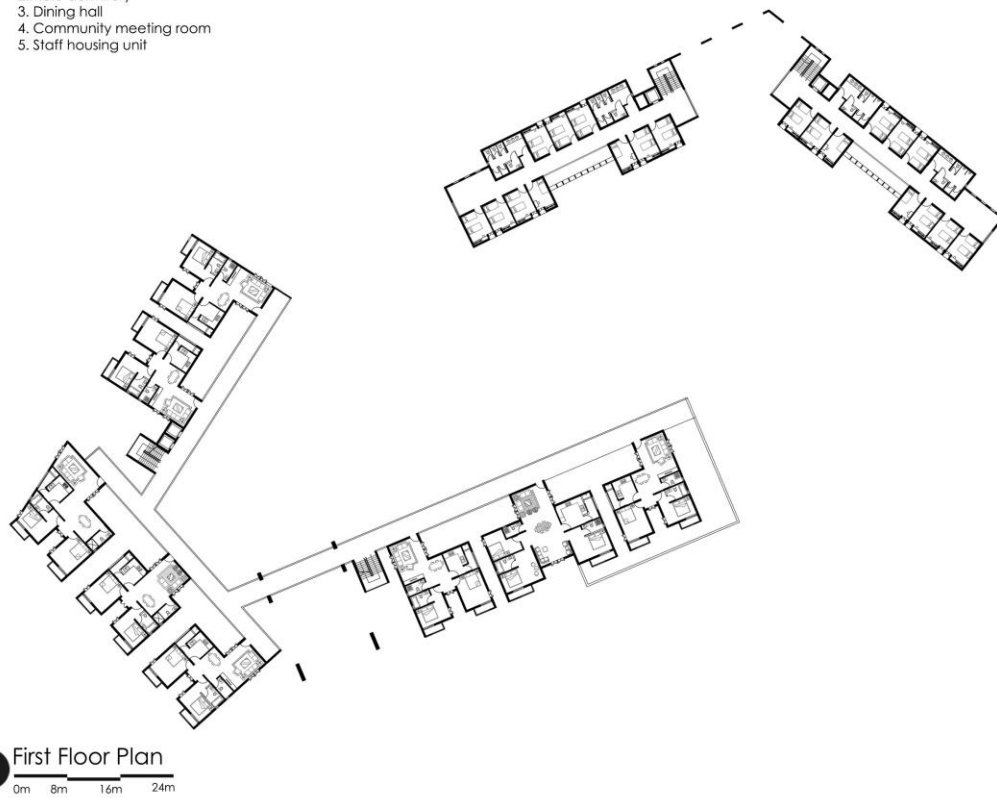
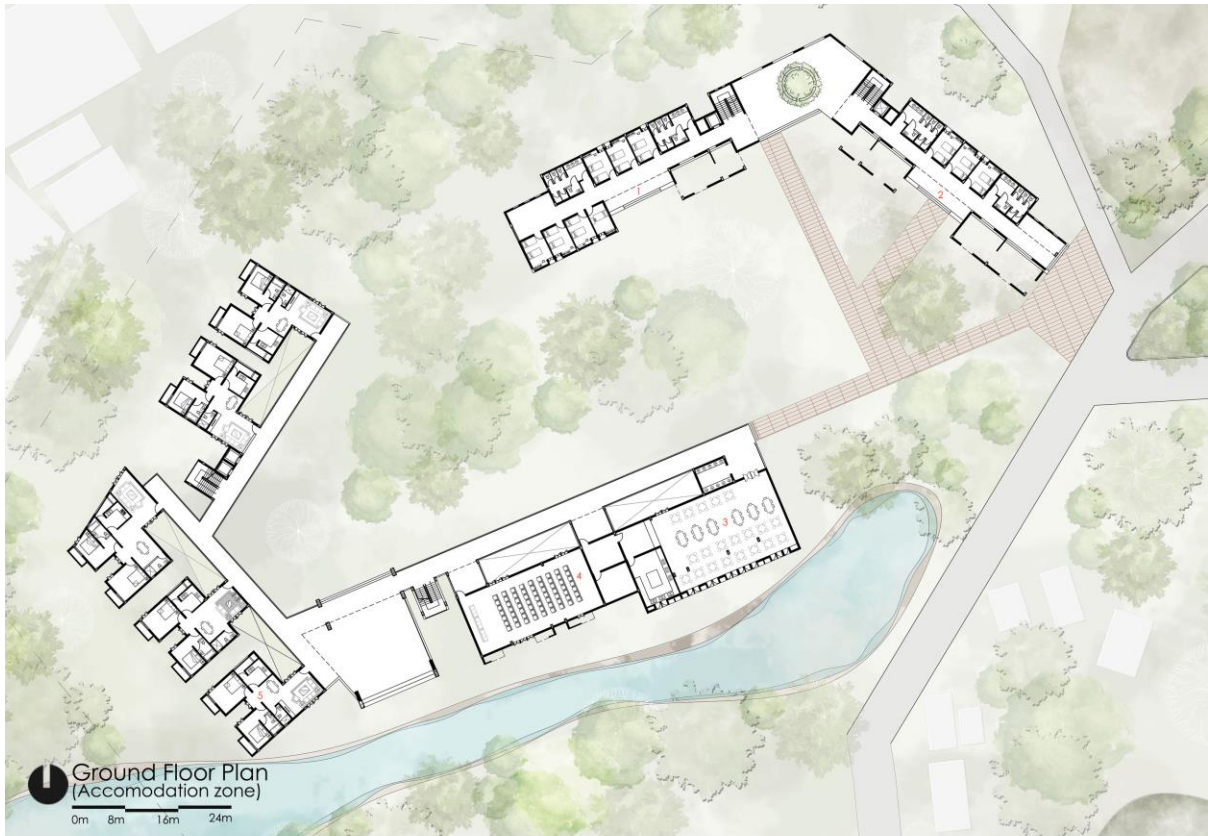
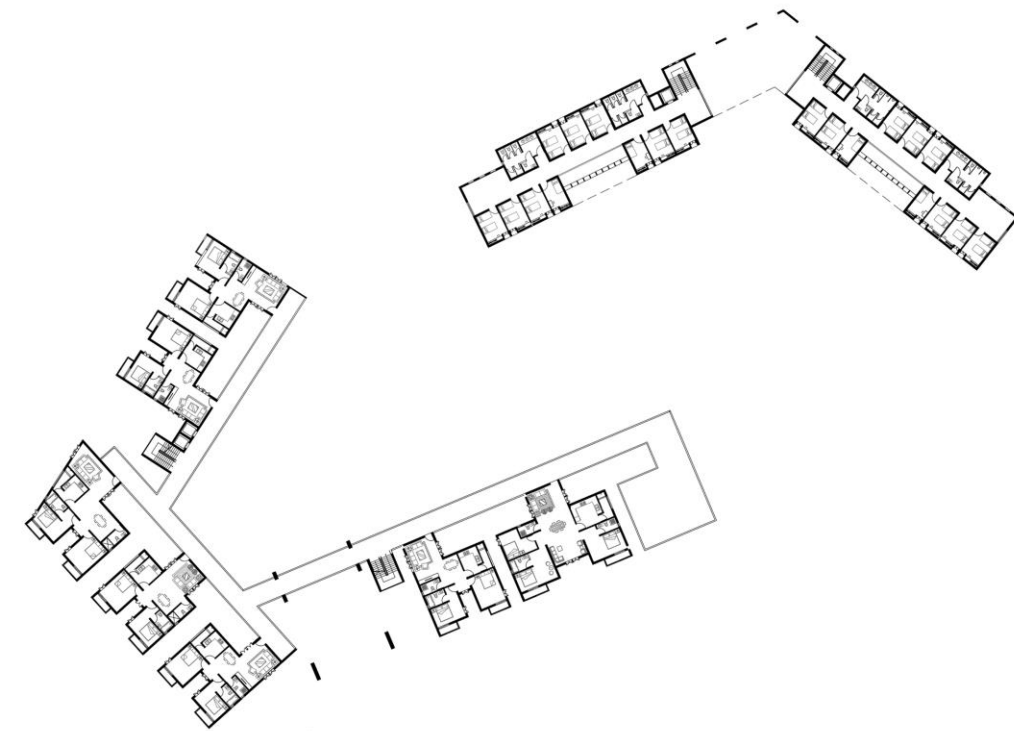
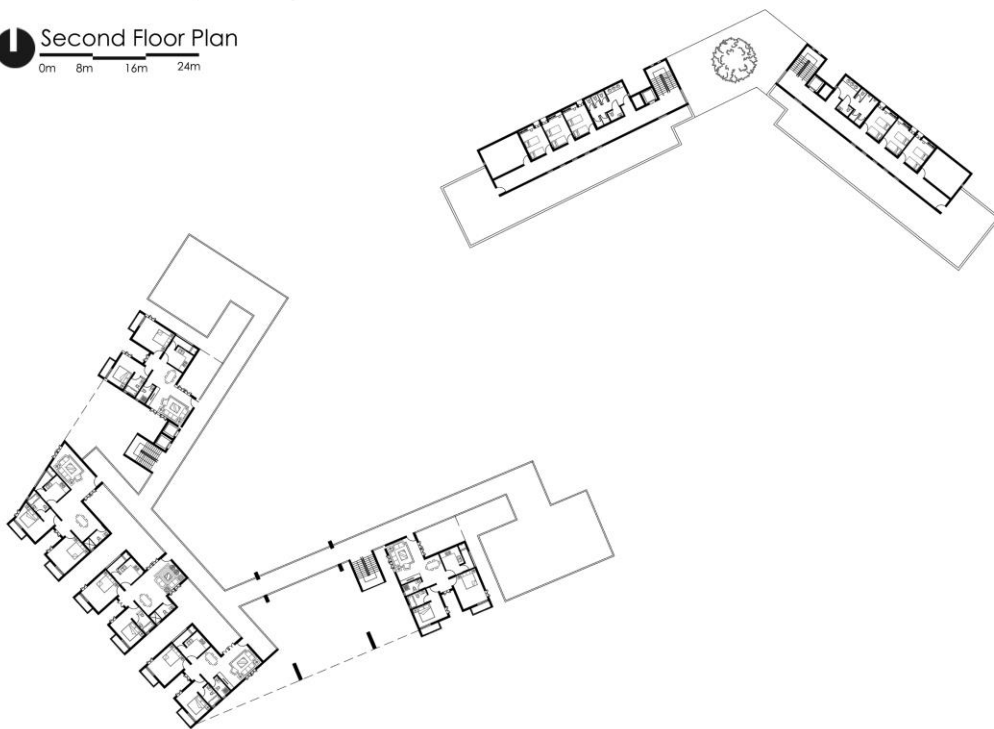


Figure 35 Ground and First floor plan (Accommodation zone)

(Source: Author)



Second Floor Plan
0m 8m 16m 24m



Third Floor Plan
0m 8m 16m 24m

Figure 36 Second and Third floor plan (Accommodation zone)

(Source: Author)

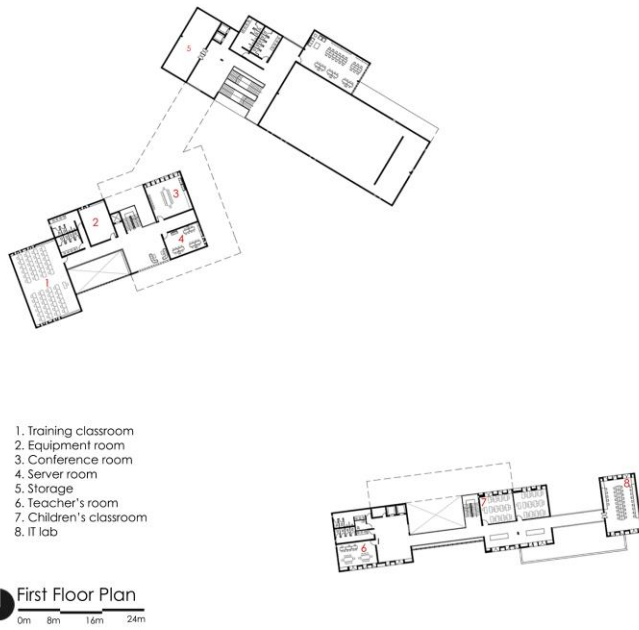
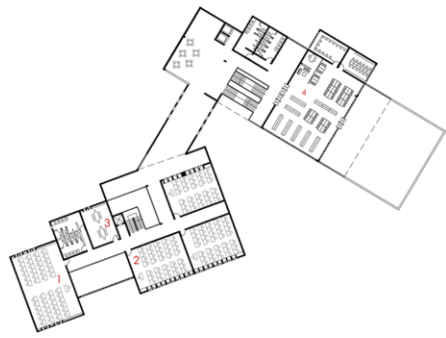


Figure 37 Ground and First floor plan (Academic zone)

(Source: Author)



- 1. Examination room
- 2. Training classroom
- 3. Trainers meeting room
- 4. Trainee's Library
- 5. School library



Second Floor Plan
0m 8m 16m 24m

- 1. Indoor games room
- 2. Exhibition space



Third Floor Plan
0m 8m 16m 24m

Figure 38 Second and Third floor plan (Academic zone)

(Source: Author)

6.4 Section



Figure 39: Section AA

(Source: Author)



Figure 40: Section BB

(Source: Author)

6.5 Elevation

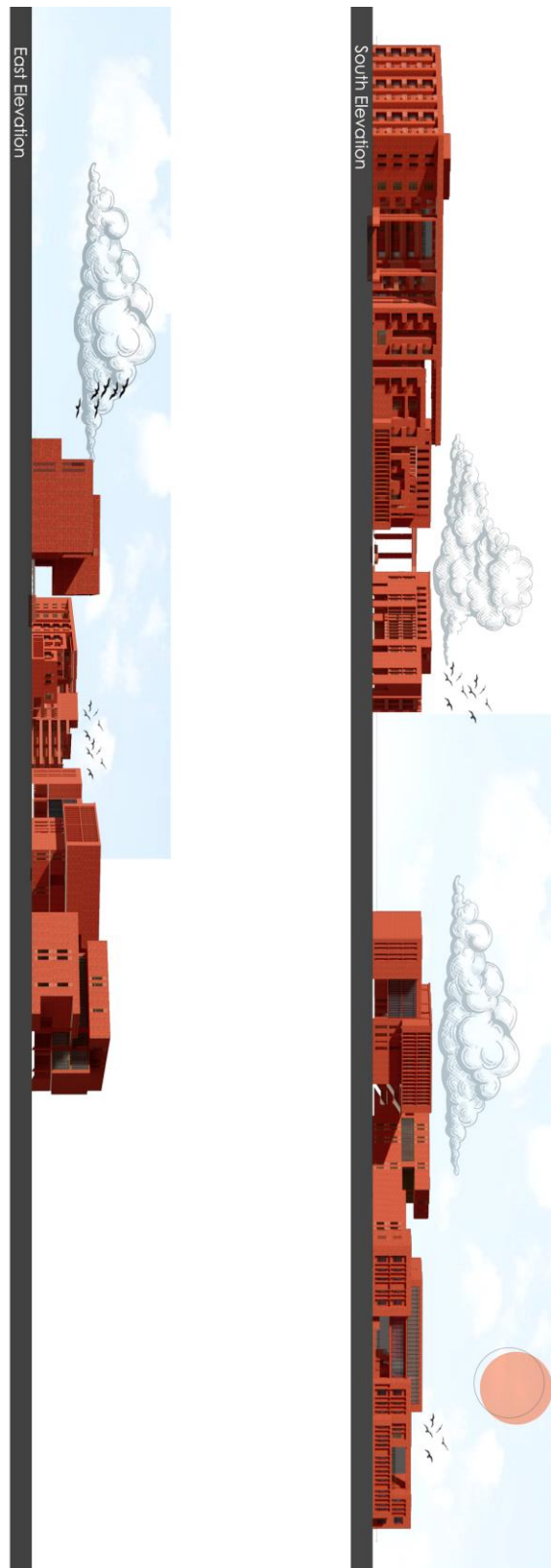


Figure 41 South and West Elevation

6.6 Perspectives



Figure 42 View of School block



Figure 43 View of Training academy block



Figure 44 View from ghat at Staff accommodation block



Figure 45 View from Accommodation zone

6.7 Model Images



Figure 46 Site model Image

(Source: Author)

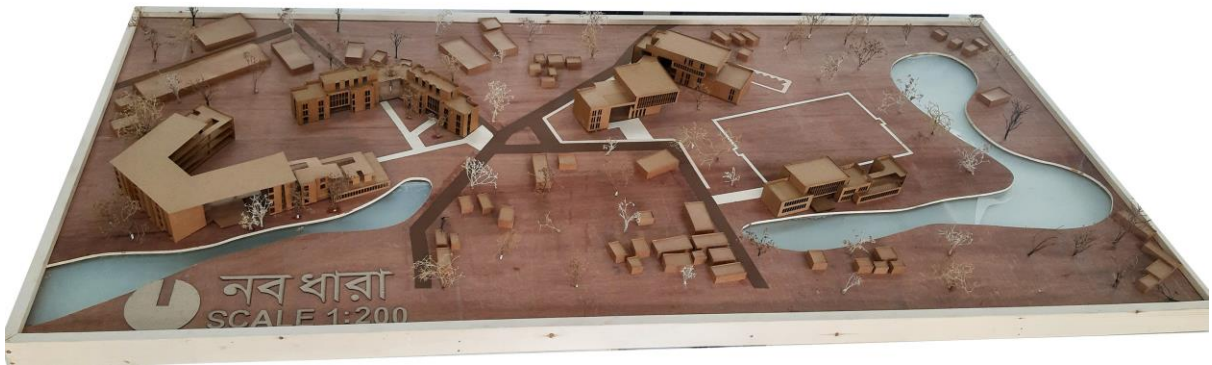


Figure 47 Main model Image I

(Source: Author)



Figure 48 Main model Image II

(Source: Author)



Figure 49 Main model Image III

(Source: Author)



Figure 50 Main Model Image IV

(Source: Author)

Chapter 7: Conclusion

The project is an initiative from the government towards a new transformation in the history of land records. As an implementer, the most obligatory responsibility was to construct an academy that inclusively serves the purpose. It is disheartening to witness the disappearance of ecological pattern around the site. The main idea of the project was to restore the lost ecological pattern through strategic development and addressing the existing nature at most. The ideas merged are positive site forces for the project which eventually represents a better place with conscious thinking about the environment.

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