LGED CENTRAL TRAINING CENTER
GAZIPUR

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

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

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Abstract

The Local Government Engineering Department (LGED) is considered to be the largest government engineering department of Bangladesh that plays a vital role in the infrastructural and transportation sector of the rural part of the country. With over Thirteen Thousand employees working in Upazila, union and village level, the institute lacks a central training facility to providetraining for its officers and staff. The Central Training Center (CTC) which is proposed for conducting vast training facilities will be constructed at the Rajendrapur Upazila of Gazipur District, near BRAC CDM. The complex will include facilities for academic/training, administrative, research, recreational, residential, multipurpose hall, mosque, health facility and other utilities. The training center will also conduct training for the staff of LGI (Local GovernmentInstitutes) as they are included in the same line ministry, the ministry of Local Government Rural Development & Coordination (LGRD & C).

This paper focuses on establishing how the architectural design of the Central Training Center ofLGED can serve the demand of the in-house training facilities while providing the best suitable environment for all trainees.

Key Words

Training Facility, Capacity development, Gazipur, Local Government Engineering Department, Central Training Center, Ministry of Local Government Rural Development & Coordination.

Acknowledgement

It gives me great pleasure in submitting the paper on LGED Central Training Center. The completion of this paper wouldn't have been possible without the guidance and support of my well-wishers. Their contribution is greatly appreciated and gratefully acknowledged. I would like to express my deepest appreciation and gratitude to my faculty Abul Fazal Mahmudun Nobi Sir, S M Kaikobad Sir and Naim A Kibria Sir for their endless support and constant guidance while writing this paper. I would like to thank my team of juniors who helped me to conduct a detailed site analysis. And last but not the least my dearest husband who is an Officer of LGED has helped me with my site visits and other information regarding the existing facility of the project. Above all, I would like to thank the Almighty for the countless blessings.

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List of Acronyms

LGED	Local Government Engineering Department
LGRD & C	Local Government Rural Development & Co-Ordination
LGEB	Local Government Engineering Bureau
CTC	Central Training Center
RTC	Regional Training Center
BARD	Bangladesh Academy for Rural Development
IIM	Indian Institute of Management

Chapter 1

Introduction

1.1 Introduction to the Project

Local Government Engineering Department (LGED) is the largest engineering government department of Bangladesh. LGED plays a crucial role in building and maintaining the much-needed infrastructures, especially in the rural areas. The mission & vision of LGED is to develop and manage of local infrastructure for increasing farm/non-farm production, generating employment, improving socio-economic condition, promoting local governance, poverty reduction and acts as agent of change at the local level, overall management and maintenance at all level of development including transportation, market and small-scale water resources infrastructures with the participation of beneficiaries, stakeholders with proper emphasis on environmental and social safeguard issues; and provide institutional and technical assistance to strengthen local government bodies and extend cooperation to local stakeholders and communities.
Improvement of Upazila roads, Union roads, Village roads, culverts, small bridges, ponds, lakes, dams etc. atrural level. LGED also constructs urban facilities like, sweeper's colony building, flyovers, land offices, primary schools etc.

The total officers & staffs of LGED are around 13,398, including one Chief engineer, 15 additional chiefs, 34 Superintending engineers, 160 executive engineers, 491 Upazila engineers, alarge number of assistant engineers, sub-assistant engineers, surveyors, work assistants, computeroperators etc. With this large number of employees, there is a huge requirement of training facilities, which the department lacks. The Head Quarter has a training unit which is capable of providing training to only a few staff and officers. Even for the basic foundation training of officers, LGED has to depend on other training facilities like, RDA, Bogura, BARD, Cumilla, NATA, Gazipur, BPATC, Savar, BIAM, Eskaton etc. Despite having the manpower for conducting training, lack of an infrastructure has hampered the implementation of trainingfacilities. For this reason, a central training facility is very necessary for the vast engineering department. The training facility will not only train the staffs of LGED, but also provide training for its line division, like staffs of the LGI's (Local Government Institutions), i.e., Zila Parishad, Upazila Parishad, Union Parishad and City Corporations etc. staffs can also be trained in this central training facility. This project will include a multipurpose training facility for the LGED staffs and other corresponding institutions.

1.2 Problem Statements

The Local Government Engineering Department (LGED) is the largest contributor to the rural infrastructural development after the independence of the nation. For the department to carry out its programs and projects more efficiently and more economically it needs training facilities for its staff and officers. So, the scarcity of Central training facilities lies in LGED and has been a requirement for the past decade after its rapid growth in manpower and project.

1.3 Project Rationale

The rationale behind taking this project is that, the department of LGED in its past few decades has contributed to rural connectivity and has built more than 3,50,000Km of paved and earthen roads as well as growth centers and bazaars contribution to GDP and implementing the goals of SDG in which states, GOAL 8: Decent Work and Economic Growth and Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable, Target that states, "Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning". LGED has a huge manpower who aretrying to fulfill the targets of SDG and other prospective plans of the Bangladesh government. Byproviding them with the proper training infrastructures, they can enhance their ability and work more efficiently at field level. Just in recent times, LGED has recruited 286 Assistant engineers and 667 sub-assistant engineers who require a lot of training before they can work in field level. The training center can conduct training for the staff of LGI (Local Government Institutes) as they are included in the same line ministry, the ministry of Local Government Rural Development & Coordination (LGRD & C). So, a central training facility is a vital requirement for increasing the efficiency of the vast engineering department. If a central training facility is built, the engineeringdepartment can carry out its training facilities for the newly recruited engineers and other staff without any obstacle. For these reasons, I have chosen this Central Training facility of LGED as my thesis project.

1.4 Project Objectives

The objective behind taking this project is that, the department of LGED in its past few decades has contributed to rural connectivity and has built more than 3,50,000Km of paved and earthen roads as well as growth centers and bazaars contribution to GDP and implementing the goals of SDG in which states, GOAL 8: Decent Work and Economic Growth and Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable, Target that states, “Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning”. LGED has a huge manpower who are trying to fulfill the targets of SDG and other prospective plans of the Bangladesh government. By providing them with the proper training infrastructures, they can enhance their ability and work more efficiently at field level. Just in recent times, LGED has recruited 286 Assistant engineers and 667 sub-assistant engineers who require a lot of training before they can work in field level. The training center can conduct training for the staff of LGI (Local Government Institutes) as they are included in the same line ministry, the ministry of Local Government Rural Development & Coordination (LGRD & C). So, a central training facility is a vital requirement for increasing the efficiency of the vast engineering department. If a central training facility is built, the engineering department can carry out its training facilities for the newly recruited engineers and other staff without any obstacle. For these reasons, I have chosen this Central Training facility of LGED as my thesis project.

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Figure 1: LGED Works

Chapter 2

Literature Review

2.1 Definition of Training & Training Centers

The term training refers to a basic concept in human resource development which is concerned with the development of a particular skill or skills to a desired standard by instructions and proper practice. Training is a highly useful tool that has the capacity of bringing an employee into a position where they can do their job efficiently and effectively. Training is the system of increasing the knowledge and skill of an employee for doing a particular job or work. According to Edwin B Flippo 'Training is the act of increasing the skills of an employee for doing a particular job' (Flippo, 1984). Training indicates the process involved in improving the aptitudes, skills and abilities of the employees to perform specific jobs. Training helps in updating old talents and developing new ones. 'Successful candidates placed on the jobs need training to perform their duties effectively' (Aswathappa, 2000). Every organization provides training to all the employees according to their designated work or post. A training center means a place where an employer provides job-related training or instruction to its employees that is designed is such a way that improves job performance and enhances the career opportunities of the employees. It refers to any premises used for the purposes of training a working animal or for purposes of conducting assessments. A training environment includes "All the physical surroundings, psychological or emotional conditions, and social or cultural influences affecting the growth and development of an adult engaged in an educational enterprise." (Emmons, 2001). In the context of the Local Government Engineering Department (LGED), the department conducts numerous training programs for its officers and staff. Quality standard training is conducted on a regular basis on the11th floor of RDEC Building of LGED situated in Agargaon, Dhaka. But only a floor with a very short capacity of participants is not adequate for conducting large scale training facility for a huge number of staff. The organization lacks a dedicated training facility with residential, academic, recreational facilities where the staff of LGED can be trained efficiently and effectively. Various training centers are there in Bangladesh for 1st class and 2nd class officers like BPATC (Bangladesh Public Administration Training Center) in Savar, RDA (Rural Development Academy) in Bogra, BARD (Bangladesh Academy for Rural Development) in Cumilla etc. As LGED has a very large manpower, it is a must for the organization to have the facility of a central training center.

2.2 Importance of a Central Training Facility

Training is an important activity of HRD which helps in improving the competency of employees of any organization. Training gives a lot of benefits to the employees such as improvement in efficiency and effectiveness, development of self-confidence and assists everyone in self-management. The stability and progress of the organization always depends on the training imparted to the employees. Training becomes mandatory under every step of expansion and diversification. Training can improve the quality of employees and improve the efficiency. Training is also very essential to adapt to a changing environment. It has regular training programs for its key drivers, the Engineers. LGED trains more than a thousand sub-assistant engineers, around 500 Upazila engineers, many work assistants, computer operators, accountants, accountant assistants. The organization conducts technical training on the construction of rural roads, design standards, training on quality control, public procurement, contract management, project management etc. All these trainings at present are being conducted in the Head Quarter of LGED where there is a shortage of capacity for participants. LGED at a time cannot conduct more than 3 or 4 training courses with around 20-30 participants in each batch. Whereas, the total manpower of LGED stands at more than 13 thousand. LGED has provided training for contractors, drivers and laborers for more efficient output at the field level.

2.3 History of LGED & its Training Facility

LGED is engaged in planning and implementing large scale rural, urban and small-scale water resources infrastructure development projects. It also provides technical support to local government institutions (LGIs) like, Zila Parishad, Upazila Parishad, Union Parishad, to improve the country's socio-economic condition through infrastructure supply at the local level and stakeholder capacity building. LGED is the largest government engineering organization in Bangladesh, with a staff exceeding 13,000 and a development budget of more than 26 billion BDT accounting for 7% (FY 2021-22) of the total development budget of the Government of Bangladesh. (Dr. Fahmida Khatun, 2021). The history of the LGED training institute begins at birth. LGED being one of the leading engineering organizations considers training as an important part. Training activities of LGED started under the former Works Program Wing (WPW) of the government in 1982. It gained momentum in 1984 with the establishment of the then Local Government Engineering Bureau (LGEB). Accordingly, a Training Unit (TU) was established at headquarters level in Dhaka. In August 1992, LGEB was upgraded as LGED and the TU started functioning as LGED Central Training Unit. The organizational setup of LGED Training Unit was strengthened by the creation of new positions of Additional Chief Engineer, Superintending Engineers, 4 Executive Engineer and 2 Assistant Engineers. According to the new organizational setup, 14 Regional Training Centers (RTCs) have also started functioning from May 2012. All 64 districts and 491 upazilas are covered through the 14 regional offices situated at different regions of the country such as, Mymensingh, Cumilla, Barishal, Khulna, Kushtia, Chattogram, Sylhet, Madaripur, Bogura, Dinajpur, Dhaka, Faridpur, Rangpur,Patuakhali, Rajshahi Jessore etc. Training courses are also implemented at district, upazila and union levels according to the targeted groups of training. The training courses are funded by both revenue budget & development budget.

2.4 Present Condition of Training Facility of LGED

Presently, The Central Training Unit located at the 11th & 12th Floor of RDEC Building of LGED headquarters at Agargaon, Dhaka. The unit is equipped with 4 lecture rooms, 3 ICT training rooms, seminar rooms, library and residential accommodations at the 14th floor of the building for around 50 individuals. Dining facilities are also available for more than 140 participants. The Regional Training Centers (RTCs) on the other hand are not that much rich in resources. They comprise of lecture rooms, ICT rooms and dining facilities. Training rooms are well furnished with air-conditions, white board, flip chart, laptop and multimedia projector etc. The training courses are implemented not only conducted at CTU but also at the RTCs. The training courses of LGED are funded from the Revenue (Government) Budget as well as Development Budget. Most interestingly, only 0.99% of the LGED‟s last 10 training was 13 funded from revenue budget while the rest 99.01% were supported by development budget.

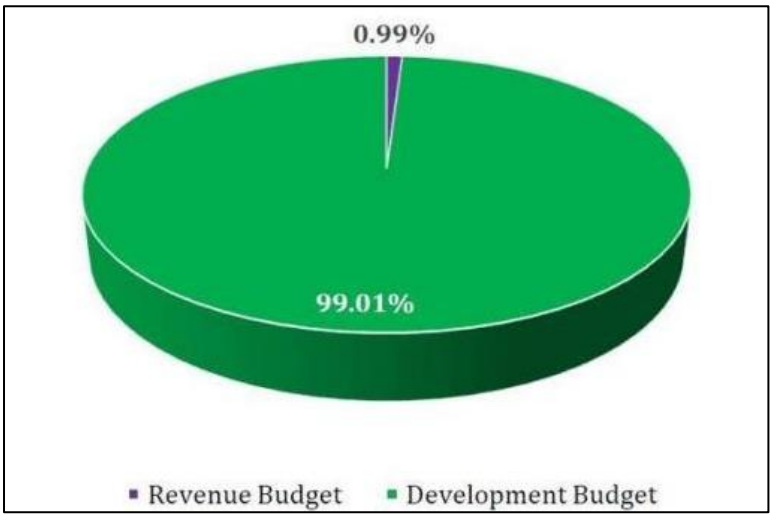

Figure 2: Training Fund sources for Ten Years (From FY 2008-09 to FY 2017-18) of LGED

The courses under revenue budget are conducted for LGED officers and staff, while LGED officers and staff, LGI representatives, project personnel, contractors, beneficiaries and other 24 stakeholders participate in development project funded training programs. LGED Training Statistics shows that the revenue budget for training has been very steadily but very slowly increasing over the last 10 years while the development budget is highly fluctuating. (LGED, 2018)

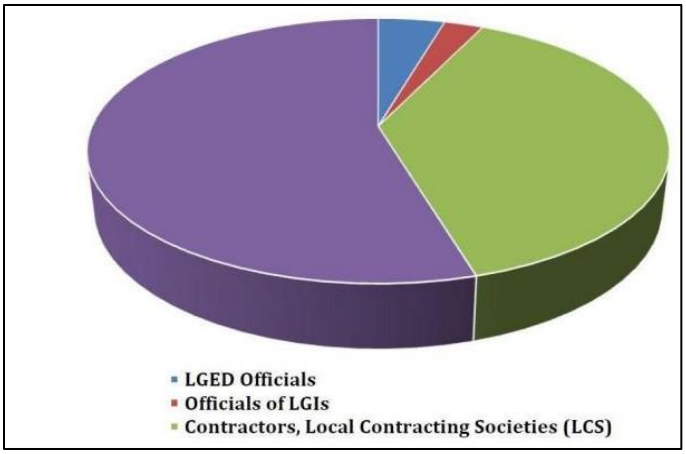

Figure 3: Category wise participants of Training for Ten Years (From FY 2008-09 to FY 2017-18) conducted by LGED

All this makes it more difficult for LGED to maintain its competence and cooperate memory, allowing it to adequately react to the new developments and challenges of today. This stresses the need for renewed attention for capacity development of LGED staff, and training. Indeed, an effective approach is to invest in human resources. Considering the mandate of LGED, it is clear that various stakeholders are to be considered for being trained by LGED. Evidently this includes LGED- and LGIs‟ staff, but also the 15 beneficiaries of LGED projects, contractors, consultants, and even the workforce. LGED training is performed both in-house as in external institutes and organizations. (LGED Training Statistics, 2017-2018) This was confirmed in a World Bank Study of June 2009 “Operational Risk Assessment (ORA) for LGED in Bangladesh”. Apart from in-house training, LGED collaborates with other training and capacity building institutions, such as the Bangladesh Public Administration Training Center (BPATC), the Bangladesh University of Engineering & Technology, the Bangladesh Academy for 29 Rural Development (BARD), the Rural Development Academy (RDA) and other specialized training institutes/centers. (Ir. Johannes Lapidaire, 2019)

Figure 4: Present Training Facility at RDEC Building, LGED Headquarters (Training Room-1)

Figure 5: Present Training Facility at RDEC Building, LGED Headquarters (TrainingRoom-2)

Chapter 3

Site Appraisal

3.1 Background

Project Name: LGED Central Training Center (CTC)
Site Location: Gojariapara, Ward 22, Post Office Vaowal Mirzapur Bazar, Rajendrapur,Gazipur Sadar Upazila, Gazipur
Client: 'Ministry of Local Government, Rural Development &Cooperatives / Local Government Division' (LGED)
Site area: 13 Acres (566280 square feet)
Proposed built-up area of the project: 11493 sq m (123709.62 sq ft)

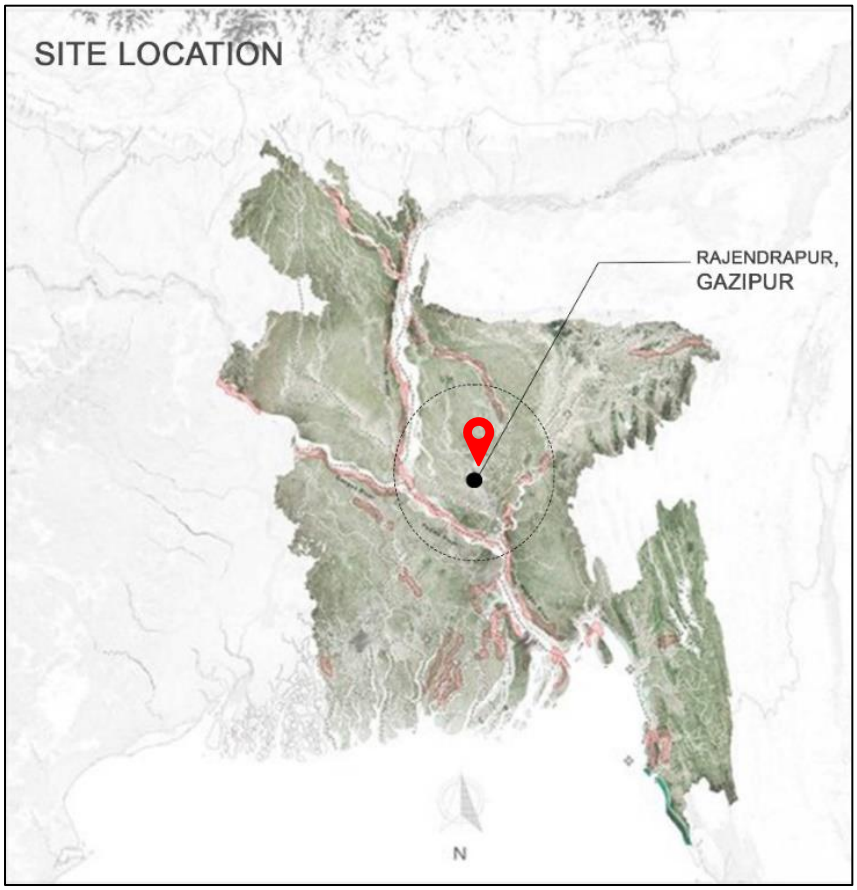

Figure 6: Site Location

The site proposed by LGED authorities for the construction of the Central Training Center (CTC) is located at the village Gojariapara, Ward 22, Post Office Vaowal Mirzapur Bazar, Gazipur Sadar Upazila and Gazipur Zila. The site is accessible by road from Dhaka. The site measures around 13 acres with few existing structures and roads. The irregular shaped site is elongated in the North-South direction. The site can be accessed by road from the Dhaka- Mymensingh highway. The BRAC Center for Development Management is located across the approach road on the North of the site. The site is secured with a boundary wall with two accessgates, one on the primary road on the North and the other on the secondary road on the East.

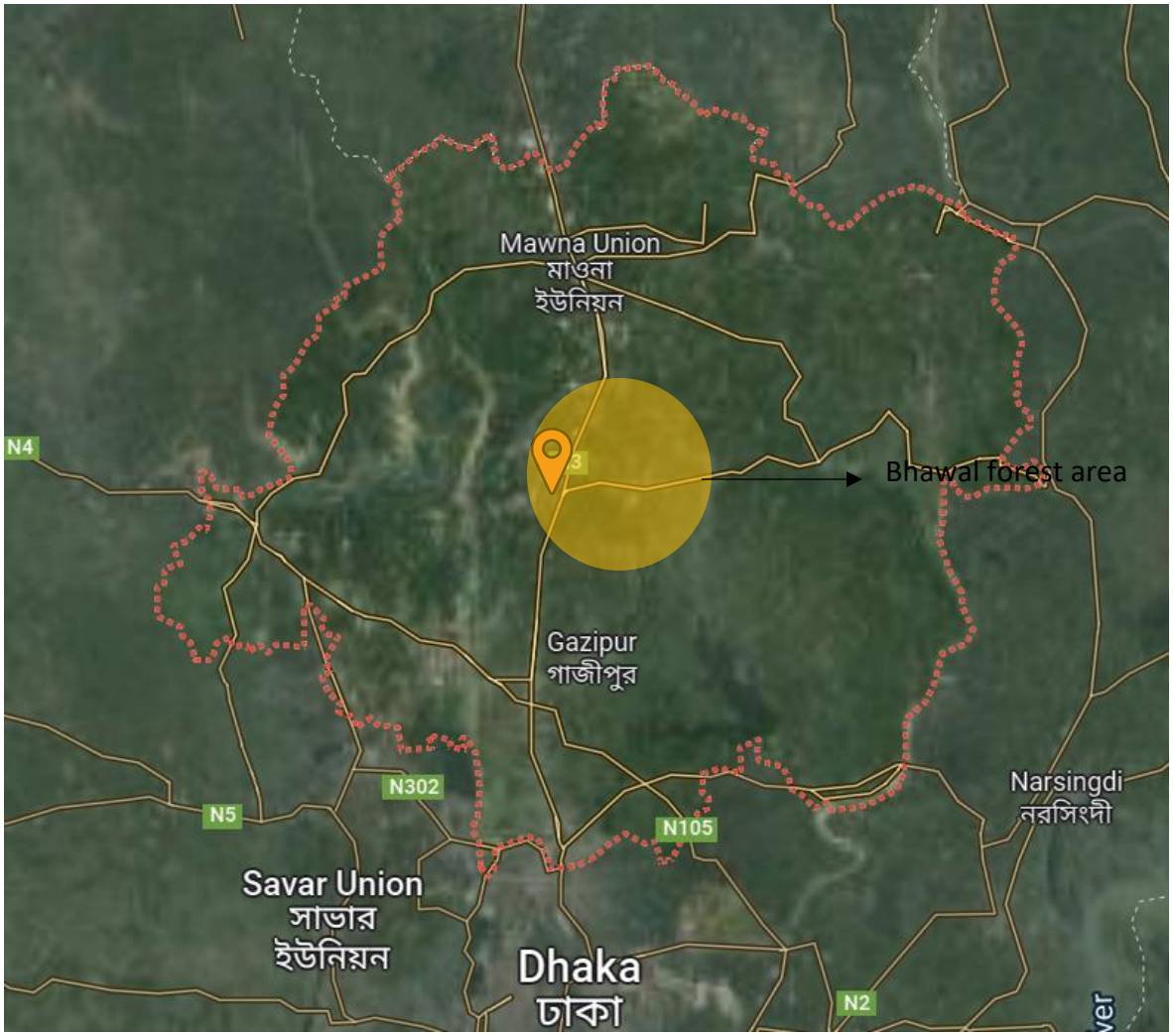

Figure 7: Site Location Near Bhawal Forest

3.2 Historical Development of the Site

Gazipur is located at north of the capital city Dhaka of Bangladesh. Gazipur district is one of the historical regions with hundreds of years old tradition. The previous name of the Gazipur region was “Joydebpur”. Once, the region was under the deep jungle of Vowal Pargana. Sakeswar Monument of emperor Ashok period, Dardia fort of Mourja period, Buddhist Monastery of the king Dhol Samudra reminds us the history of 2500 years ago. The first Bengali dictionary and grammar and the first printed book of prose (1733) was written by Portugal priests in the region. The best Muslin (very thin fabrics) of the country was producedin Titbati village in Kapashia and it was very popular throughout the world. Originally, the site area was used as an agricultural land but gradually it has become a mixed used area due to expansion of urbanization. The site is surrounded by farmlands, homesteads, institutional and industrial establishments. The site is owned by LGED for a long period of time and was being used as storage. Currently, the site is being used by LGED as a rest house and stackyard. Itis now also being used as a training facility for developing construction skills of the laborers in arenovated existing shed.

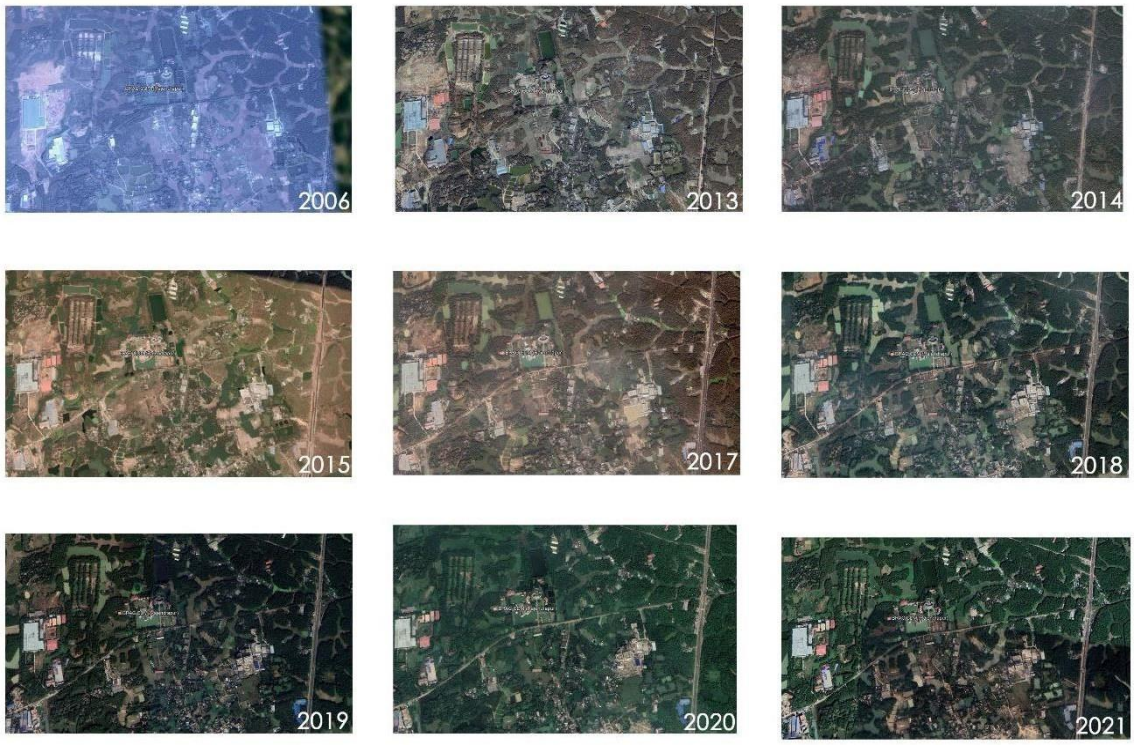

Figure 8: Historical Development of Proposed Site (From 2006-2021)

3.3 Geographical Site Location

The site is located in the industrial area of Rajendrapur node in Gazipur Sadar upazila. It has coordinates of 24°05'38.9"N and 90°23'27.3"E. The irregular shaped site is elongated in the North-South direction. The site can be accessed by road from the Dhaka-Mymensingh highway. The site is surrounded by farmlands, homesteads, institutional and industrial establishments. TheBRAC Centre for Development Management is located across the approach road on the North ofthe site. The site is secured with a boundary wall with two access gates, one on the primary road on the North and the other on the secondary road on the East. This secondary road alone is hometo many big projects like BRAC CDM, healthcare Pharmaceuticals, Amber Cotton Mills, Asian paints, third terrace resorts and many more.

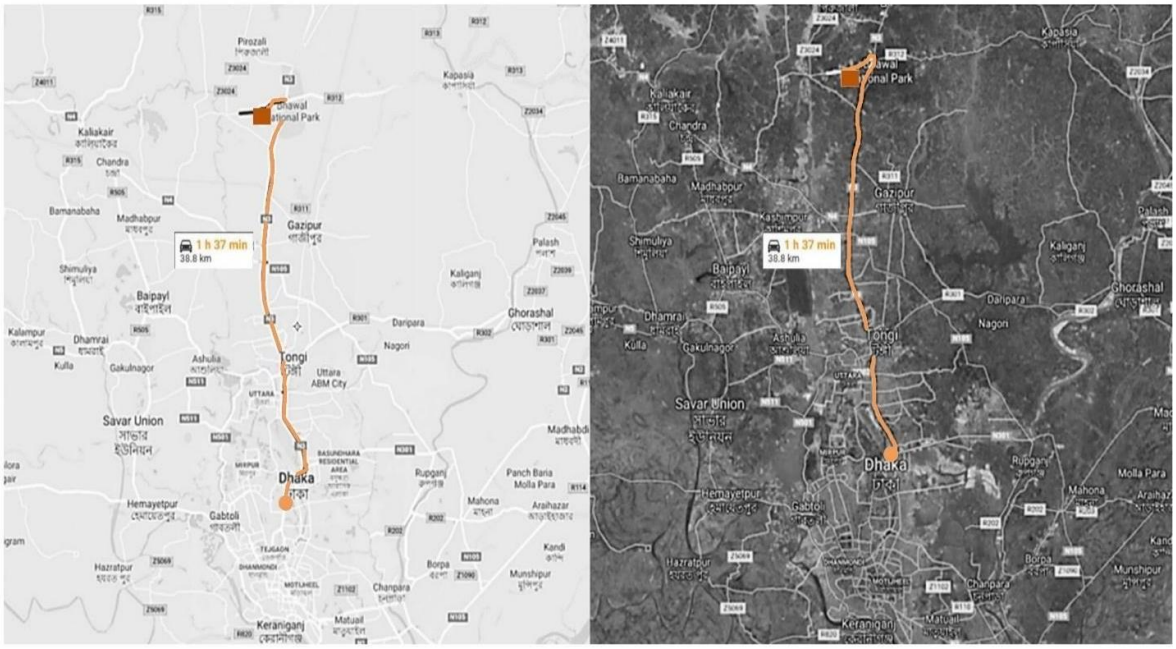

Figure 9: Geographical Location of Site

Figure 10: Geographic Location of Site from Highway

3.4 Site Analysis

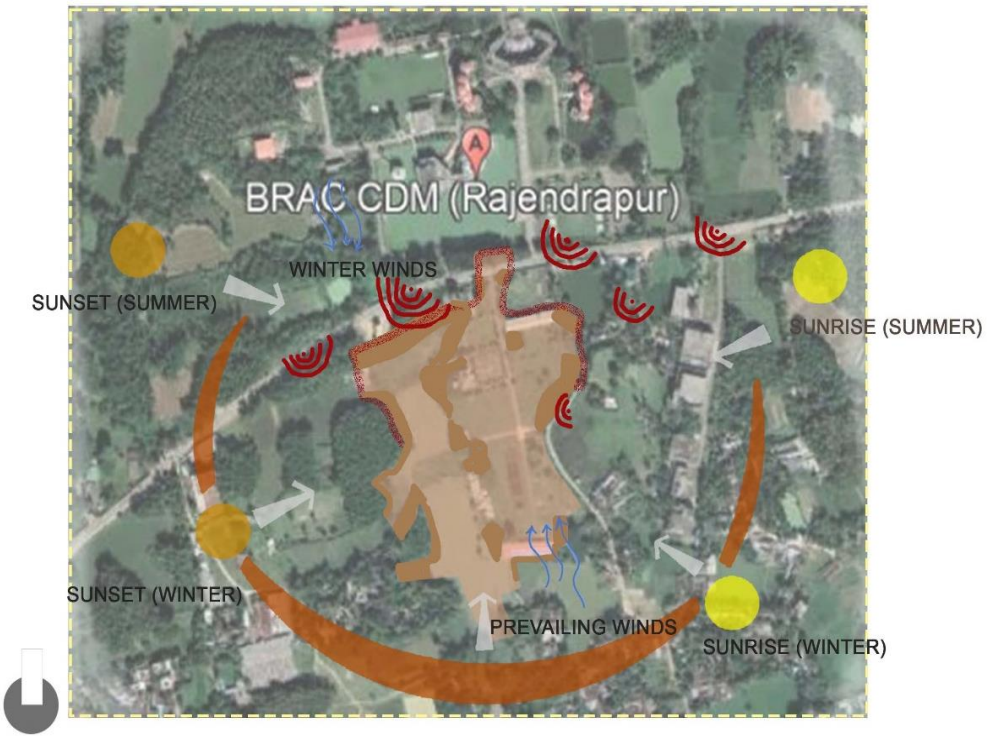

Figure 11: Site Analysis

Main features of the site are

-Shading from canopies.

-Noise from main road enters the site throughout the day.

-Main road traffic is the main reason for noise pollution.

-This area is affected by the red brick particles from the brick trucks that carry brick from brick field.

-The entire road is also covered with red brick particles that also enter the site.

3.5 Solid & Void Spaces surrounding the site

Figure 12: Solid & Void spaces surrounding the site

3.6 Land-use Pattern of the Surroundings

The land around the site is mostly mixed-use lands at present. Surrounding the site are few important features. Mostly Residential and major of them are one storied, commercial and factories can be found. Also, some resorts are there. The primary access road has few semi pucca tea stalls aligned just beside the main gate. These stalls run for the locals and the officials who work in the nearby factories. The secondary access path almost covers the eastern periphery of the site. There is a mosque and madrasa near the secondary access of the site. To the north of the site, opposite of the main road is BRAC CDM, just trespassing the boundary in the northeast side is a semi pucca factory. The shape of the site in the north is not very wide. The western part consists of a small forest (Shalbon) that blends with the internal part of the site that consists of the same plants. The boundary walls block the view from the site. In the east of the site, there is a pharmaceutical industry named Pharmacia. South part of the site is covered with one storied tin shaded residential structures.

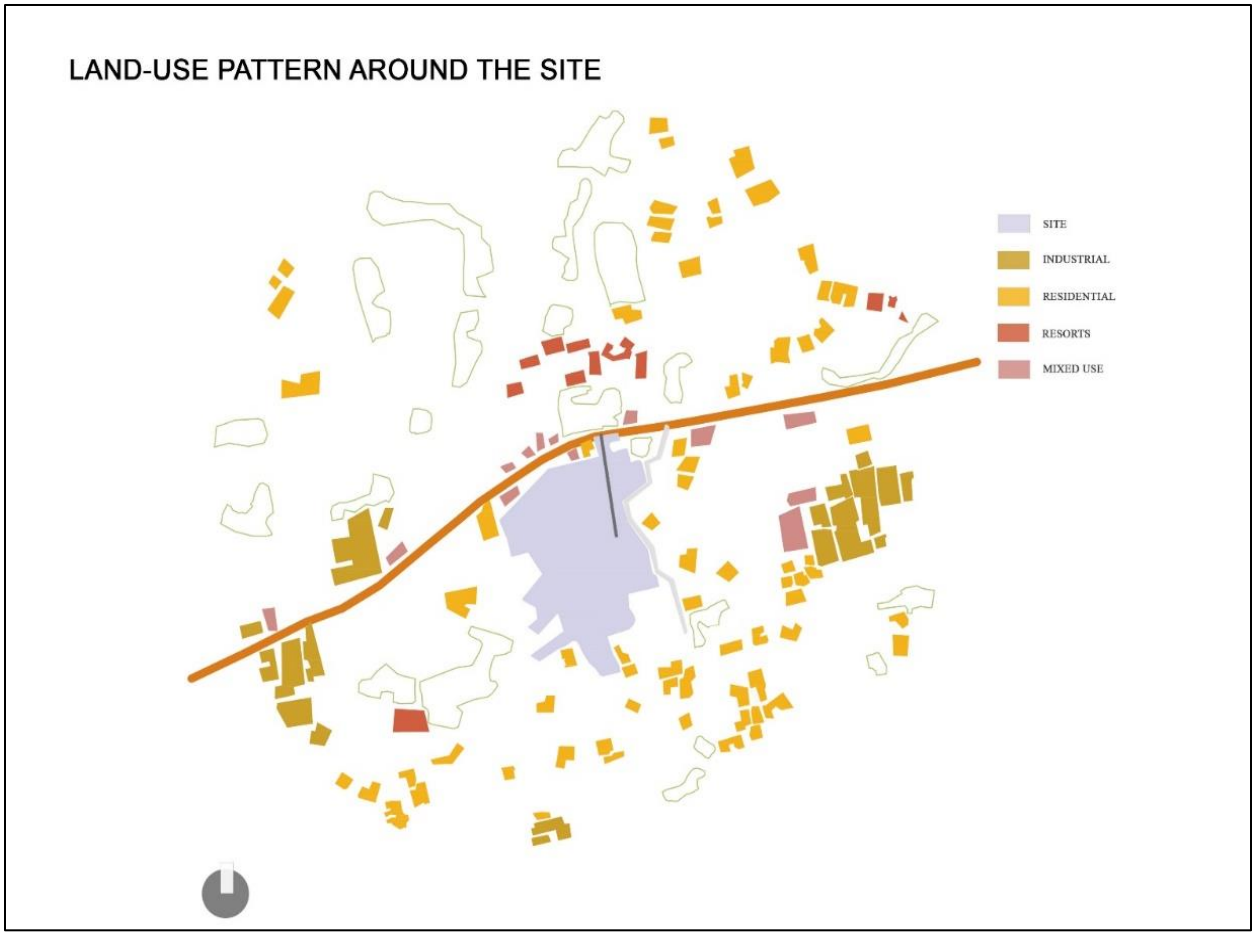

Figure 13: Land use pattern of surrounding site

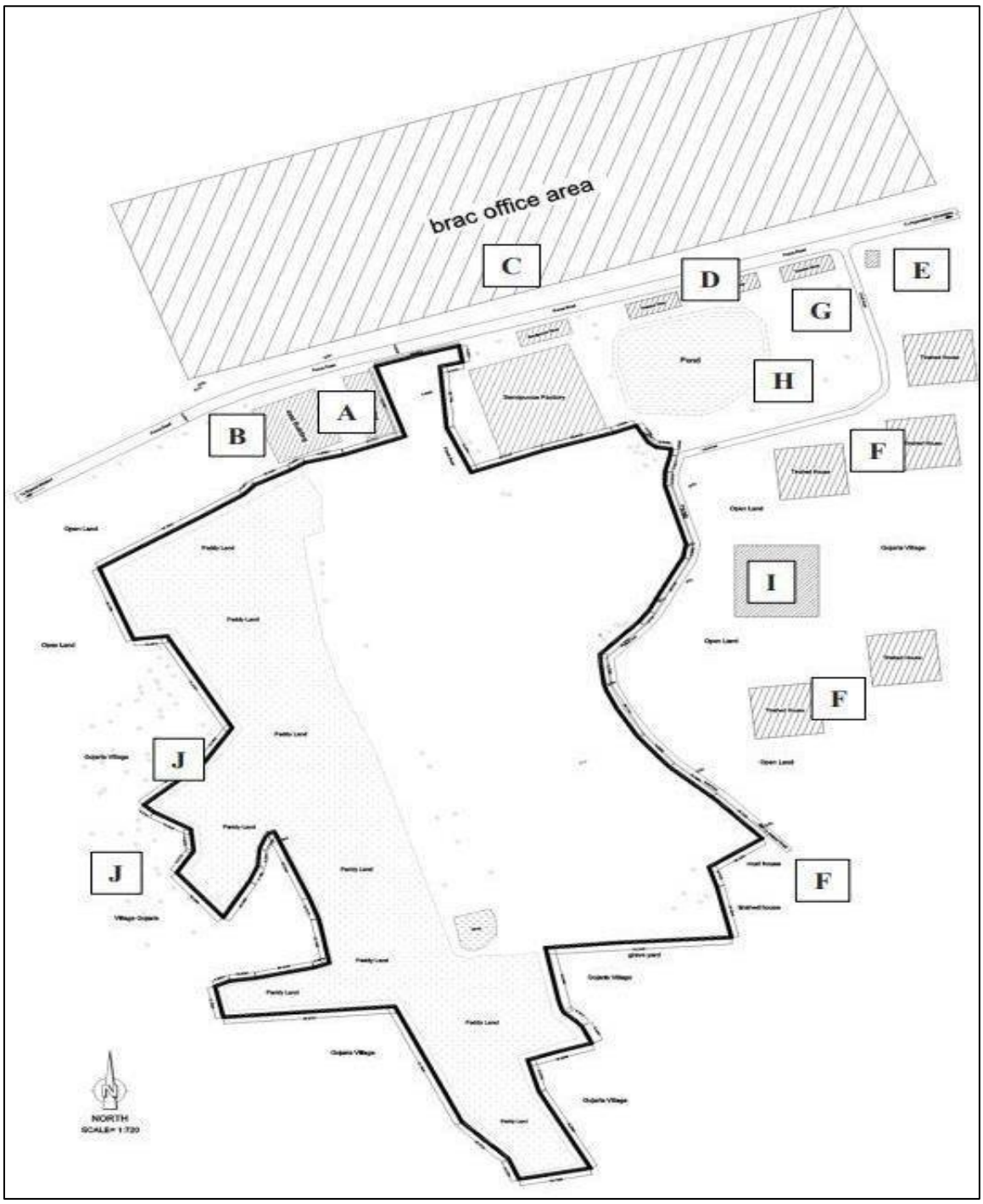

Figure 14: Site Surroundings (Source: LGED)

3.5 Geographical Characteristics of the Site

3.5.1 Topography

The site has a major section sunken in a paddy field. The paddy field is around 211000 sq ft,which is almost half the size of the site. The rest of the site is mostly straight with slight variations.

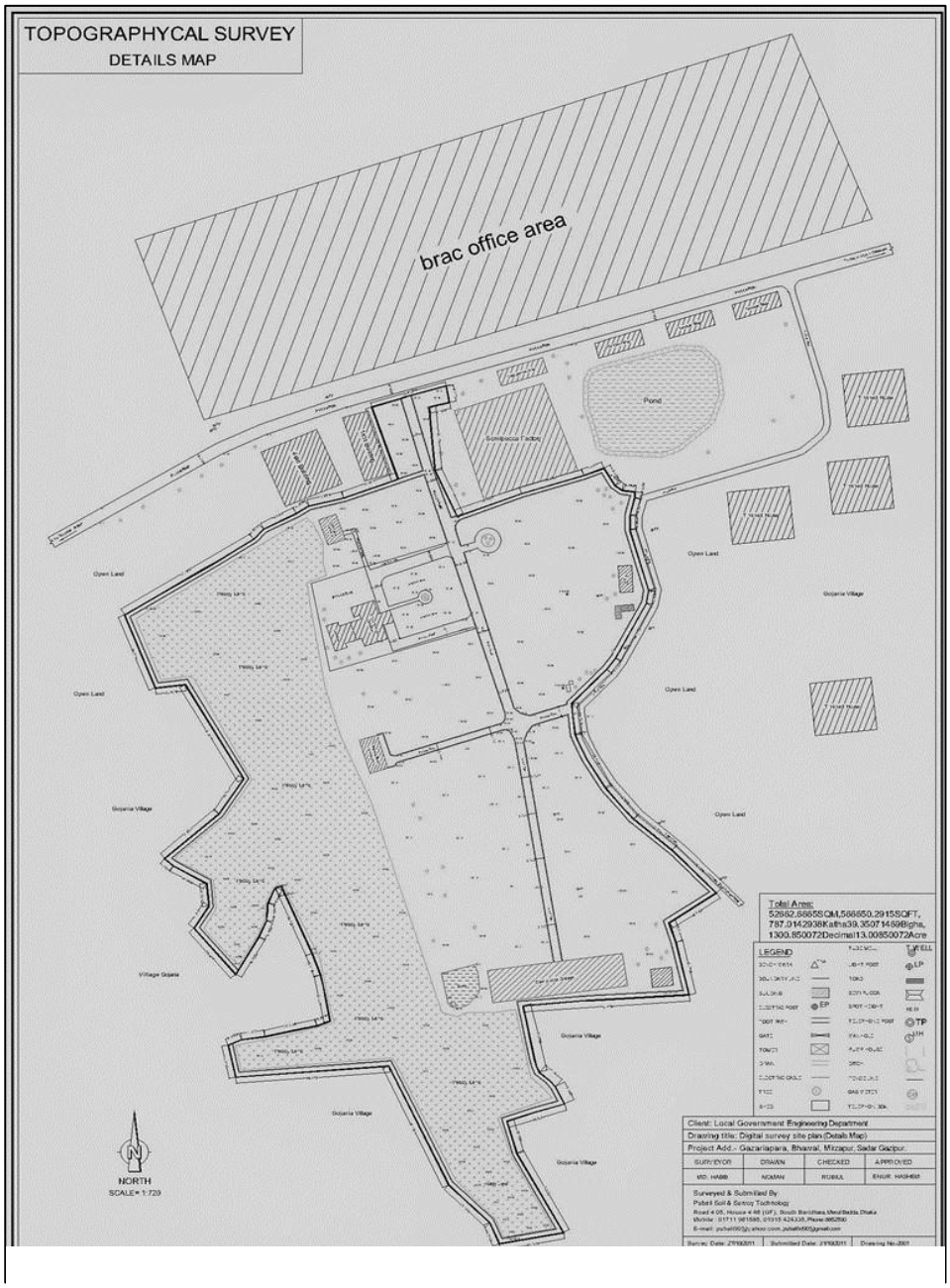

Figure 15: Topography of Site

3.5.2 Green Spaces

The site is situated in a sub urban area and the area is still covered with greenery. Shaal and Gazari forest is an important feature of the area. Bhawal forest and red soil type is an importantfeature. The site itself is full of open green spaces and big trees. The whole area is full of greenery. There are several different types of plants that have matured in the site. There was a paddy field inside the site but currently it is being reconstructed as a largepond. There is a Shalbon area adjacent to the site.

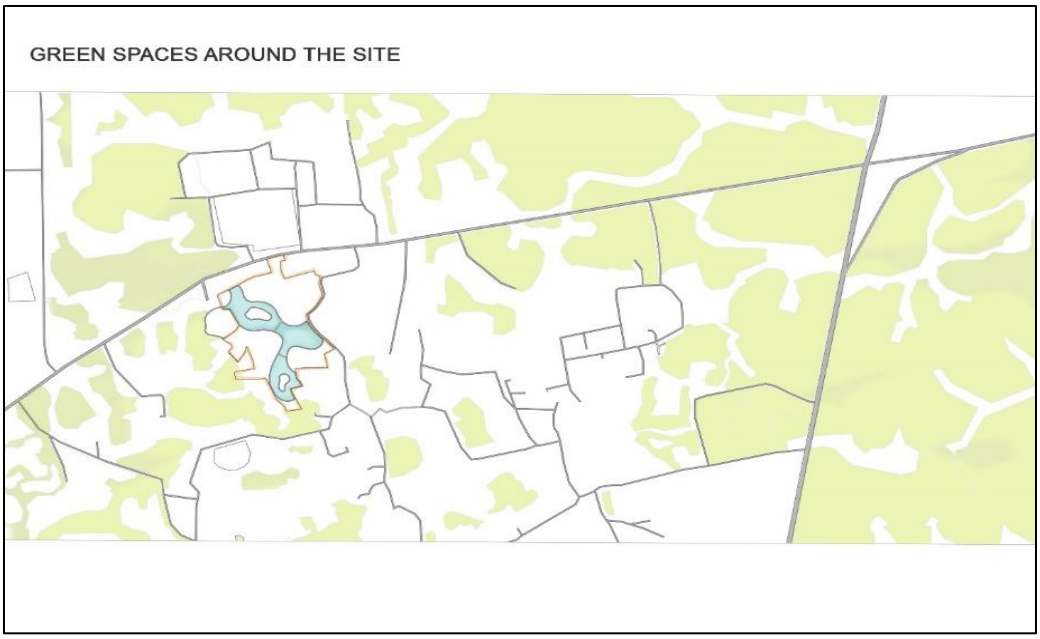

Figure 16: Green Spaces in Site

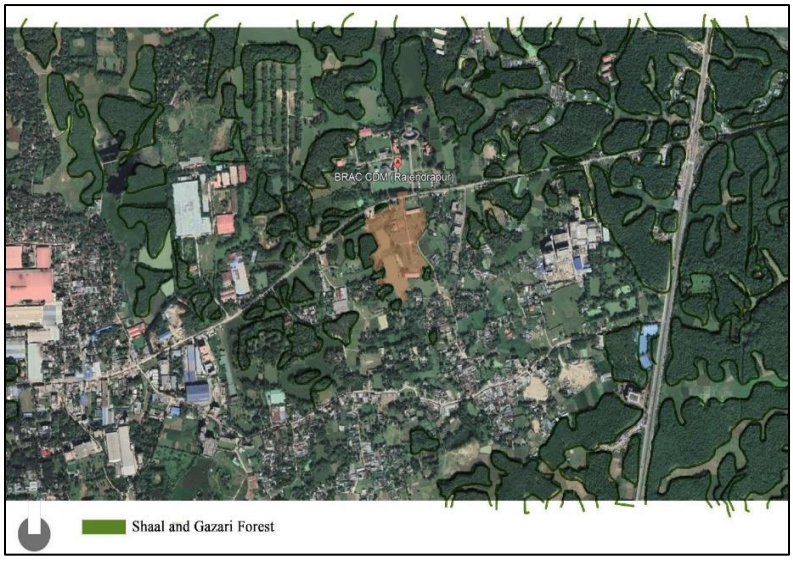

Figure 17: Shal & Gazari Forest Surrounding the Site

3.5.3 Water Body

A small pond is present in the site. It is located on the edge of the high ground. The pond is the boundary of the paddy field and the land. There was even a very large existing paddy field inside the site area and it covered almost half the size of the site. As the field was three feet below ground level it submerged underwater during rainy seasons. But currently renovation work is being done to turn the paddy field area into a large man-made pond inside the site.

Figure 18: Waterbody in site

Figure 19: Ongoing Pond excavation

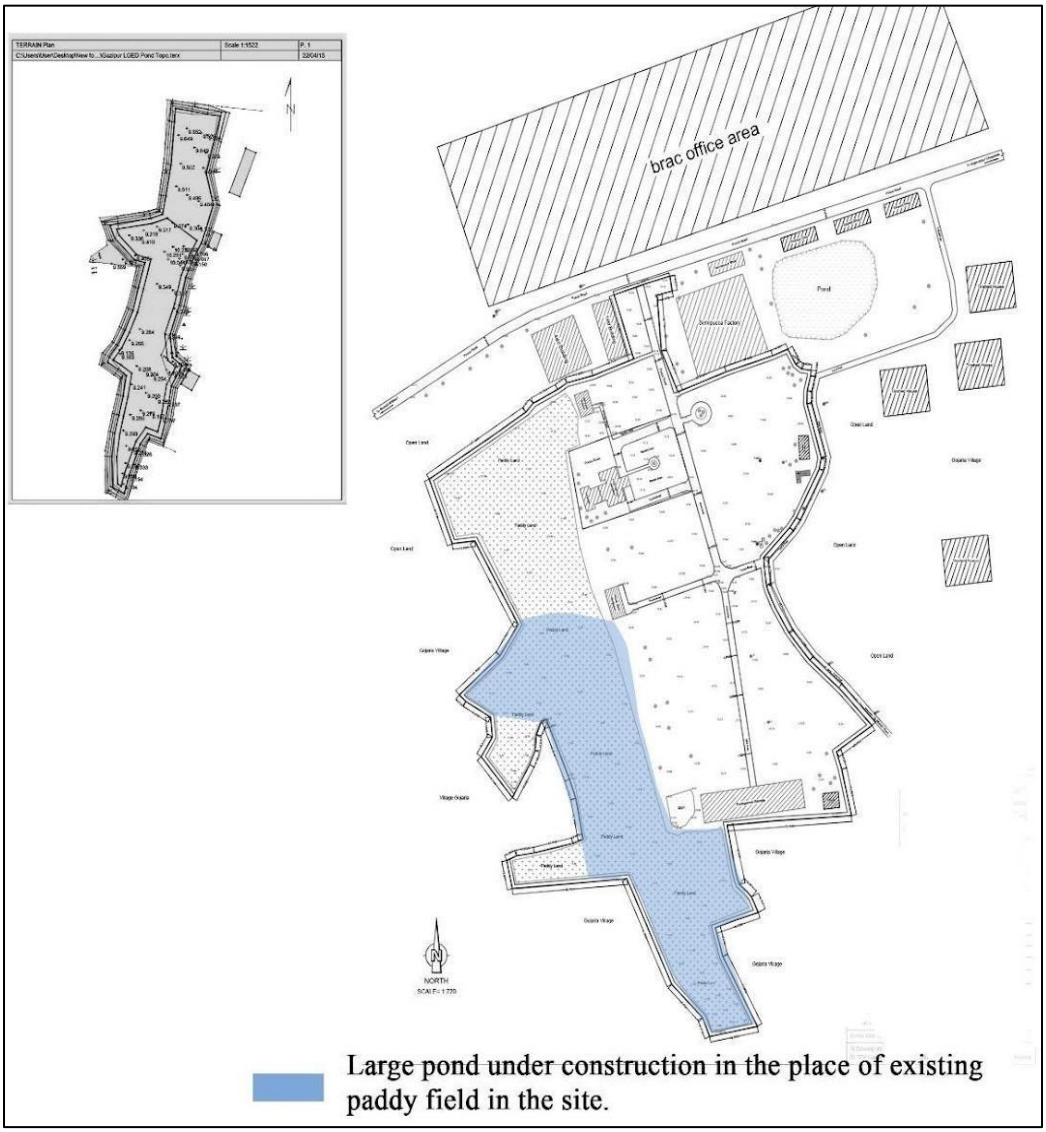

Figure 20: Existing Water Body

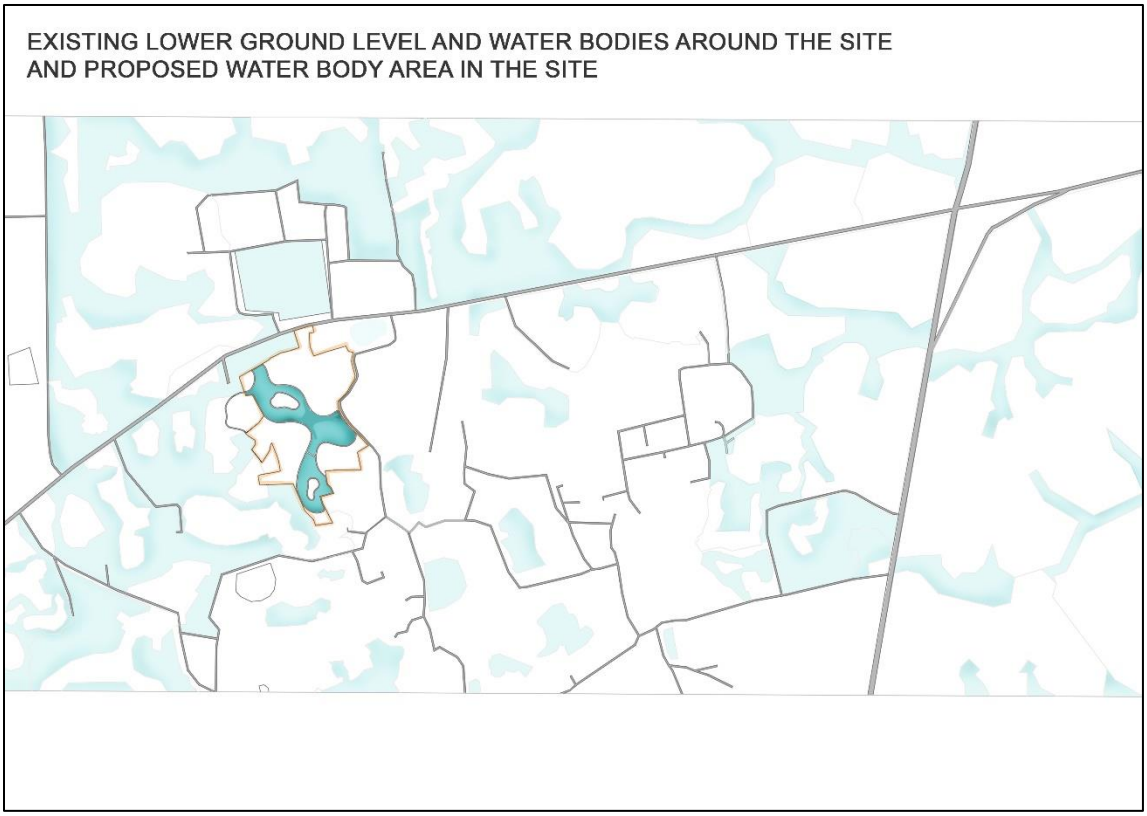

Figure 21: Existing Lower ground level & Water Bodies surrounding the site

3.5.4 Accessibility to the site

The site can be accessed by road from the Dhaka-Mymensingh highway. The site has 2 main access ways into the site. One is directly from the primary road and another one is from a secondary road. The primary road is around 5.5 meters and the secondary road is 3 meters andthe internal road is 5 meters. The primary road has pedestrian access, and the secondary road narrow in width, hence vehicular access is a bit difficult.

Figure 22: Accessibility to the Site

3.5.5 Road Network

From the city center, the site can be reached through Dhaka Mymensingh highway. The primary road, Dhaka Mymensingh highway will take one to Rajendrapur junction road where many industrial projects are taking place. This secondary road alone is home to many big projects like BRAC CDM, healthcare Pharmaceuticals, Amber Cotton Mills, Asian paints, third terrace resorts and many more. The tertiary roads branched out from the secondary road.

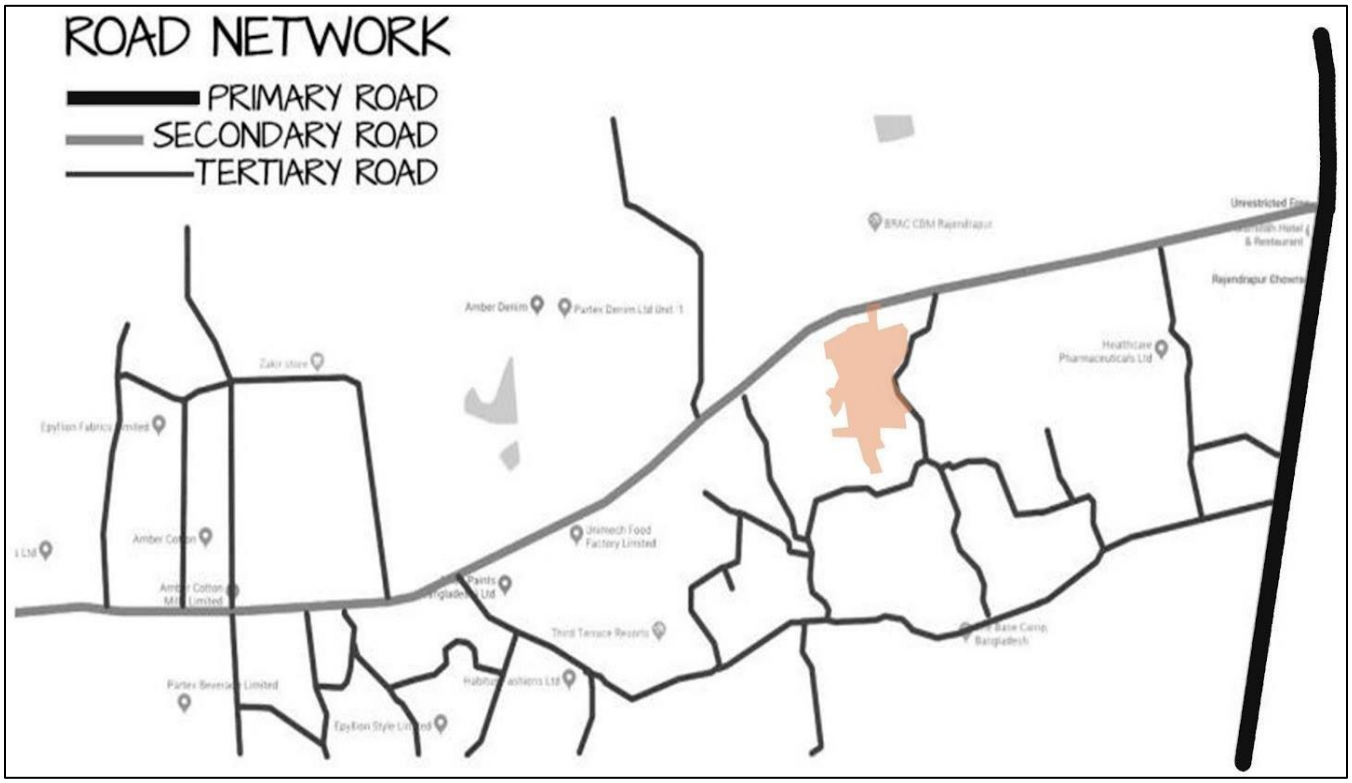

Figure 23: Road Network of Site

The site can be accessed using the secondary road and one of the tertiary roads. The secondary road leads to the primary access of the site where the tertiary road leads to the secondary accessof the site. The primary road has both vehicular and pedestrian traffic.

3.5.6 Climatic Conditions

Gazipur city like most parts of the country has a tropical climate. During the summer season, heavy rainfall is seen quite often rather than the winters in Gazipur. This climate is considered to be Aw according to the Köppen-Geiger climate classification. The average temperature in Gazipur is 25.1 °C / 77.1 °F. The annual rainfall is 2187 mm.

3.5.7 Average Rainfall

Belonging to a forestry area, rainfall is prominent in the summer & rainy seasons. The least amount of rainfall occurs in January during the peak winter. The average in this month is around 7 mm. The greatest amount of precipitation occurs in June, with an average of 389 mm which is more than average of the rainfall in Bangladesh.

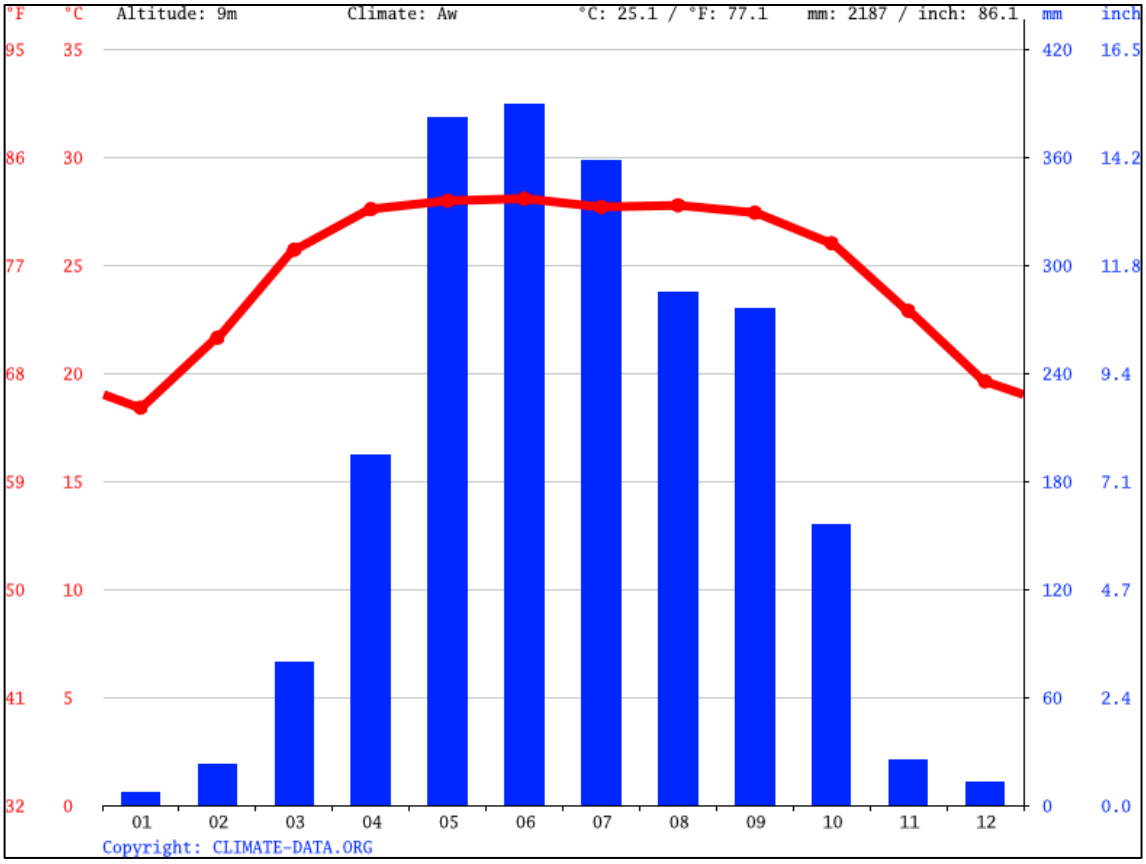

Figure 24: Graphical representation of Average rainfall Data of Gazipur

3.5.8 Average Temperature

In June, Gazipur temperatures on average are at around 28.1 °C / 82.5 °F. During the peak winter the lowest average temperatures in the year occurs, when it is around 18.4 °C/ 65.1 °F. That is in the month December & January.

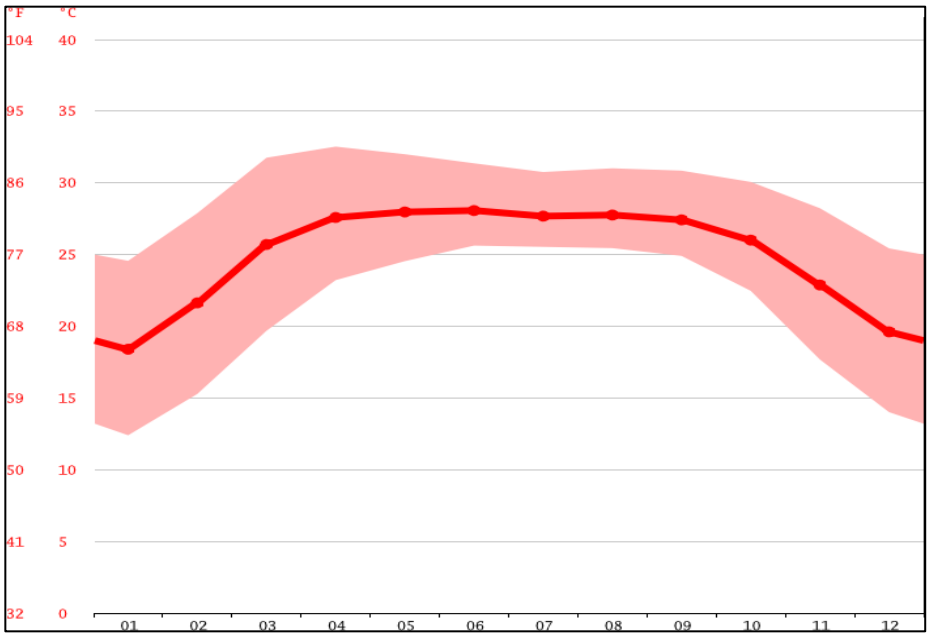

Figure 25: Graphical representation of Average Temperature Data of Gazipur

3.5.9 Weather by Month

The precipitation varies in the between the driest and wettest months is 382 mm (15 inches). The variation in temperatures throughout the year is 9.7 °C /17.4 °F. The month with the peak relative humidity is September (85.53 %). The month with the lowest relative humidity is March (58.51 %). The month with the highest number of rainy days is July (28.07 days). The month with the lowest number of rainy days is December (1.07 days). Gazipur is situated in the northern hemisphere.Summer starts here at the end of June and ends in September. The best time to visit Gazipur are February, March, October and November when its not that warm or cold.

Table 1: Monthly Statistical Weather Data of Site

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	18.4 °C (65.1) °F	21.6 °C (70.9) °F	25.7 °C (78.3) °F	27.6 °C (81.7) °F	28 °C (82.3) °F	28.1 °C (82.5) °F	27.7 °C (81.8) °F	27.8 °C (82) °F	27.4 °C (81.4) °F	26 °C (78.8) °F	22.9 °C (73.2) °F	19.6 °C (67.3) °F
Min. Temperature °C (°F)	12.4 °C (54.3) °F	15.3 °C (59.5) °F	19.7 °C (67.4) °F	23.2 °C (73.8) °F	24.5 °C (76.2) °F	25.6 °C (78.1) °F	25.5 °C (78) °F	25.5 °C (77.8) °F	24.9 °C (76.8) °F	22.5 °C (72.4) °F	17.7 °C (63.8) °F	14 °C (57.2) °F
Max. Temperature °C (°F)	24.6 °C (76.2) °F	27.9 °C (82.2) °F	31.8 °C (89.2) °F	32.5 °C (90.6) °F	32 °C (89.6) °F	31.4 °C (88.5) °F	30.8 °C (87.4) °F	31 °C (87.8) °F	30.9 °C (87.5) °F	30.1 °C (86.1) °F	28.2 °C (82.8) °F	25.4 °C (77.8) °F
Precipitation / Rainfall mm (in)	7 (0.3)	23 (0.9)	79 (3.1)	194 (7.6)	382 (15)	389 (15.3)	358 (14.1)	285 (11.2)	276 (10.9)	156 (6.1)	25 (1)	13 (0.5)
Humidity(%)	67%	61%	59%	74%	82%	85%	85%	85%	86%	83%	72%	69%
Rainy days (d)	1	3	5	12	17	20	21	21	19	11	2	1
avg. Sun hours (hours)	8.6	9.4	9.4	8.0	7.2	6.5	6.6	7.0	7.2	8.0	8.4	7.9

3.5.10 Hours of Sunshine

In the month February, the highest number of daily hours of sunshine is measured in Gazipur on an average. During this time, there is an average of 9.37 hours of sunshine a day and a total of 290.46 hours of sunshine throughout February. In January, the lowest number of daily hours of sunshine is measured in Gazipur on average. In January there are an average of 6.54 hours of sunshine per day and a totalof 196.12 hours of sunshine. Around 2863.84 hours of sunshine are counted in Gazipur throughout the year. On an average there are 94.27 hours of sunshine per month.

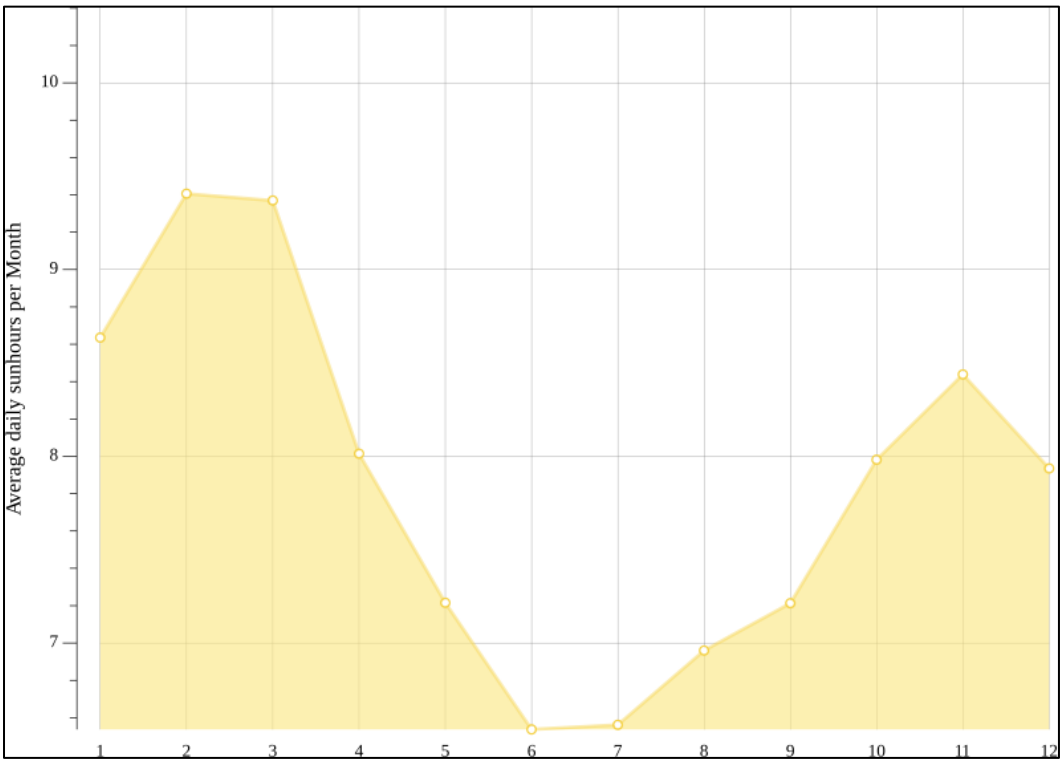

Figure 26: Average daily Sun hours per month in Gazipur

3.5.11 Socio-Cultural and Socio-Economic Conditions

People belong mostly in lower and lower middle-income groups. As there are many industries around this area, most people are workers who work in factories like garments, textile, partex industry, paint factory, ceramic industry etc. Around 70% people work in factories. Some work in fields, grow crops, some are vegetable sellers. Very few middle incomes people dwell in this area.

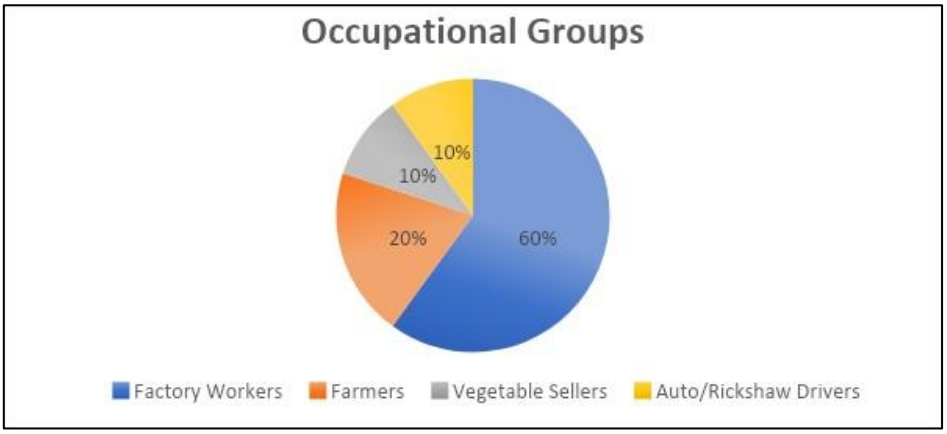

Figure 27: Different Occupational Groups around site

The locals around the site make houses using mostly tin, mud and brick. There is also a significant number of houses made of mud. As there is a brick field nearby, locals use bricks in their house walls. Bricks are mostly used in the kitchen portion of the house. There are many tin shed houses and some houses which are one or two stories high. The local stalls are made using tin and the structural support is from wood and bamboo. A pile of bamboo was found on the secondary road. The locals cut down trees from the surrounding to collect bamboo and wood and sell them wholesale or make furniture. The cluster of mud and tin houses in between courtyard patterns could be found on the settlements around the site. There are many factories which have accommodation facilities for workers and staffs. They live in 5/6 storied dormitories. But the number is very low compared to vast majority.

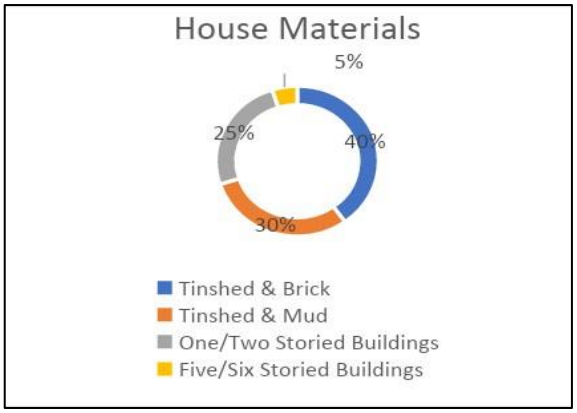

Figure 28: Different House Materials used in surrounding site

3.5.12 Existing Site Conditions

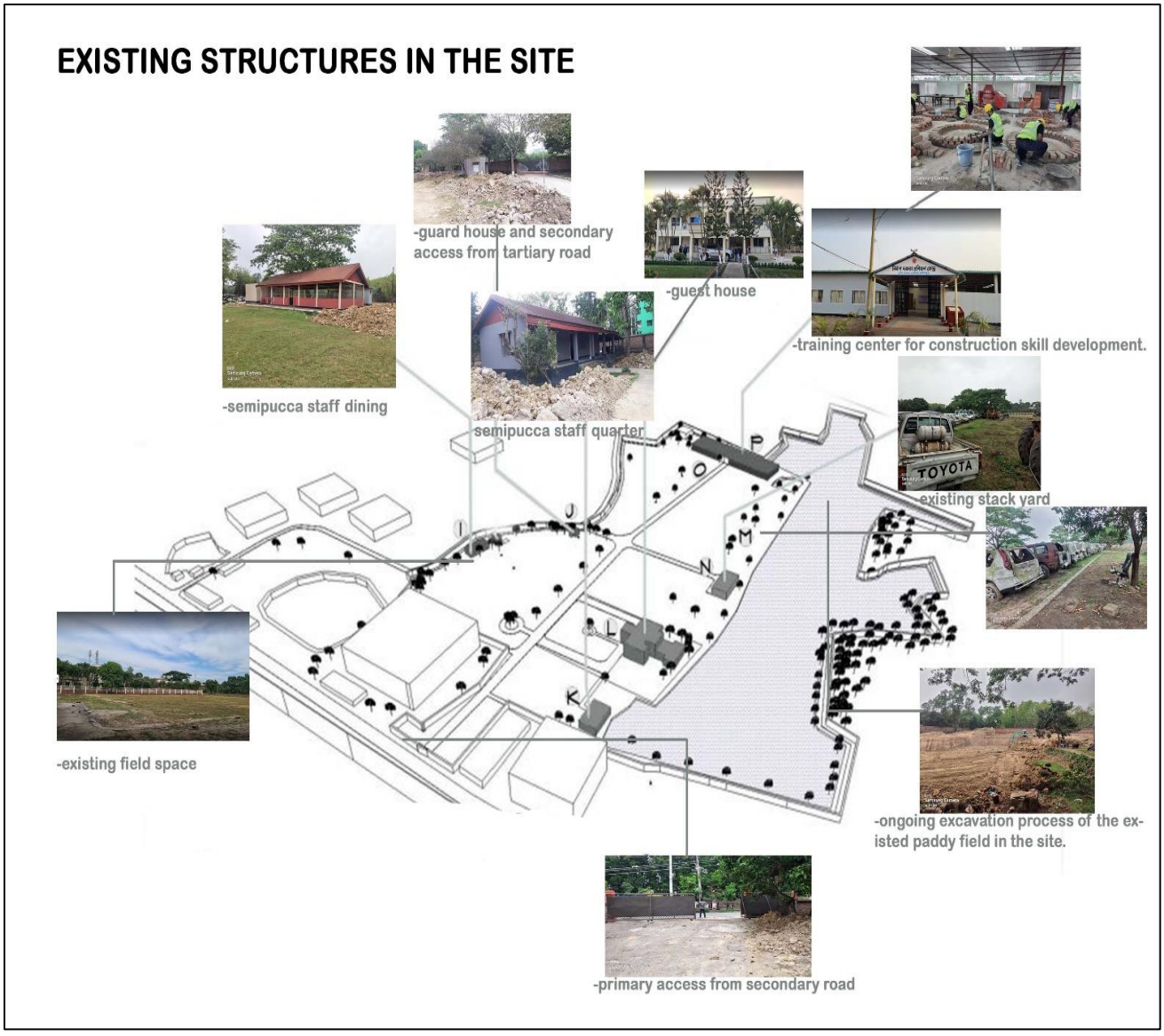

Figure 29: Detail position of Existing features in Site

There is a training center in the site which was constructed from a existed unused tin shaded space. Currently this site is being used to give basic training to the laborers to develop their construction skills. From the beginning this site is being used as a stackyard for unused or used materials from all over the country. There is an existing low ground level area in the site which was being used as a paddy field for years. Currently excavation work is going on in the existing low ground level to transformed it into a large pond area by a government project named 'IPCP (Improvement of Pond & Canal Project around Bangladesh)'. There is a rest house which is being used by the higher officials of LGED for work and recreational purposes sometimes. The existing playfield in the site is being used as a picnic spot by the LGED officials. Volley ball, Cricket, football, Badminton etc. games and sports are being played in this filed. Few staffs live with their family inside the site.

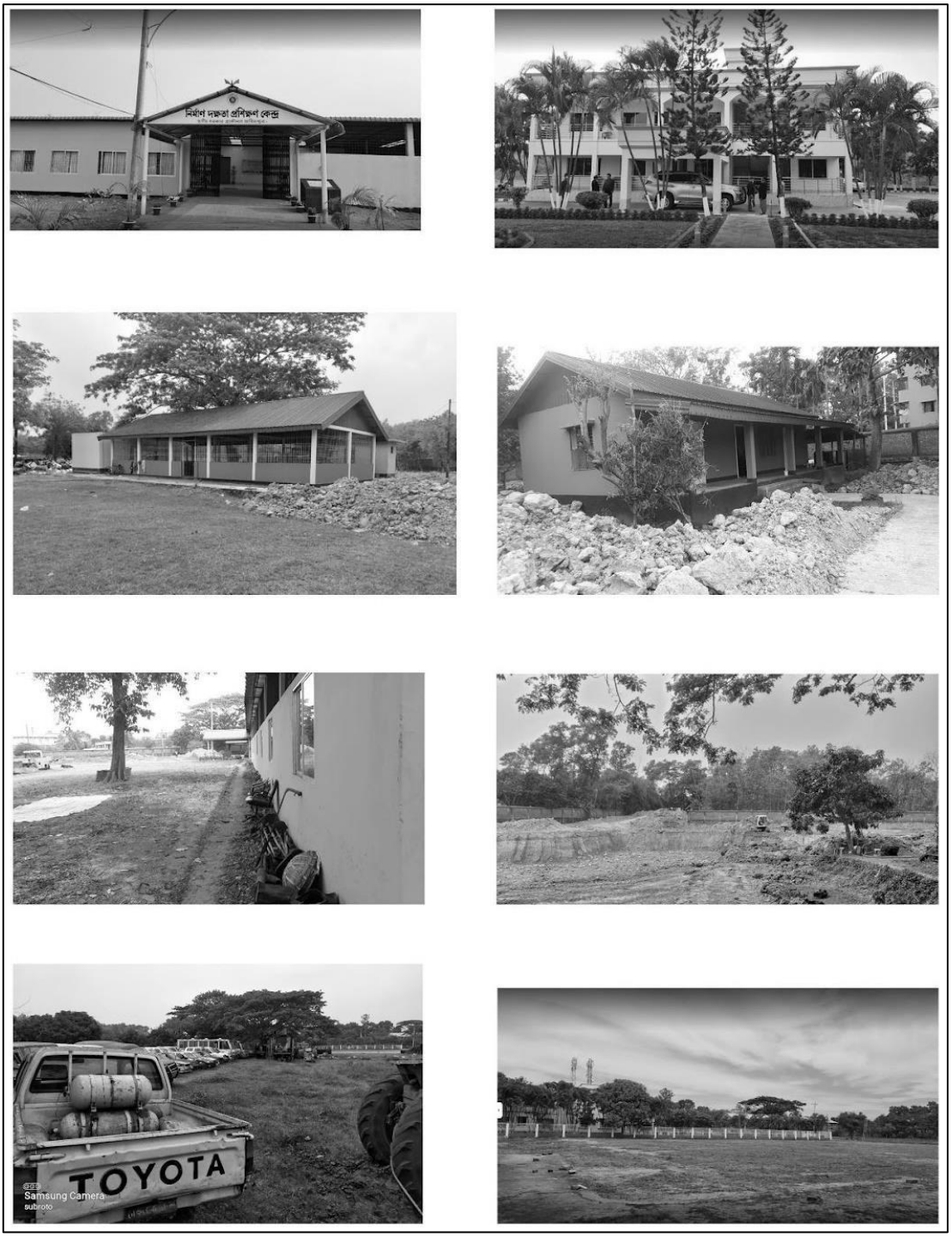

Figure 30: Images of Existing Site Condition

Figure 31: Images of Existing Site Condition

Chapter 4

Program Analysis

4.1 Program Analysis of CTC

The program analysis part addresses the various sets of programs that are proposed in the project. The Central Training Center of Local Government Engineering Department (LGED) will consist of different facilities with a capacity to provide training for 100 trainees. This large number of trainees along with trainers will need a number of facilities for conducting classes and practical training demonstrations. The whole center will comprise of administrative, academic, residential and recreational. In addition to classroom training the center will also have outdoor practical demonstration facilities. The following is needed:

(1) Academic Block

A. Classrooms
B. Auditorium
C. Library
D. Computer Lab
E. Laboratories (Material Testing, Audio Visual)
F. Practical Demonstration
G. Toilets as required

(2) Administrative Block

A. Director's office
B. Deputy Director's office
C. General Office
D. Conference Room
E. Reception / Lobby
F. Toilets as required

(3) Residential Block

A. Trainees Accommodation
B. Trainers Accommodation
C. Guest Accommodation
D. Administrative Staff Accommodation
E. Dining Hall
F. Lounge
G. Kitchen (with storage / Pantry)
H. Laundry
I. Toilets as required

(4) Recreational Block

A. Gymnasium & Indoor games area
B. Outdoor games
C. Toilets as require.

(5) Healthcare Facility

A. Doctor's Chamber
B. Toilets as required

(6) Utility and Services

A. Security and Surveillance facility
B. Fire control Room
C. Electricity Supply (Grid and Stand by)
D. Waste management system (Solid, sewage, water)
E. Water Supply System (potable, rain)
F. Parking facility (covered/open)
G. Roads and Walkways

4.1.1 Academic Block

The academic block is the most important part of the total training center. As training classes need to be conducted, four classrooms are needed that will accommodate 25 students at a time. There will be a faculty room, a library with books related to engineering and laws, a multipurpose hall for conducting seminars, a computer lab, a laboratory, a room for practical demonstration etc.

Table 2: Academic Block Function-wise Area

SL. No.	Function	No. of Users in per s ft	Net Unit Area	No. of Unit	Area in s ft (Building)	Area in sft (Shed)	Area in sft (Open Sky)
1.	Classroom	25	598	4	2392		
2.	Faculty Room	20	480	1	480		
3.	Multipurpose Hall	180	2000	1	2000		
4.	Library	32	1150	1	1150		
5.	Computer Lab	28	1150	1	1150		
6.	Laboratory	24	2300	1	2300		
7.	Practical Demonstration		3600	3		10800	
8.	Toilets		150	2	300		
9.	Staircase		210	2	420		

4.1.2 Administrative Block

An administrative block consisting of a director's office, a deputy director's office, a general office, a conference room, a reception etc. This facility will have separate toilet facilities for office and for reception.

Table 3: Administrative Block Function-wise Area

SL. No.	Function	No. of Users in per sqft	Net Unit Area	No. of Unit	Area in sqft (Building)	Area in sqft (Shed)	Area in sft (Open Sky)
1.	Director's office	1	371	1	371		
2.	Deputy Director's office	1	371	1	371		
3.	General Office	18	1167	1	1167		
4.	Conference Room	12	770	1	770		
5.	Reception / Lobby	6	375	1	375		
6.	Toilets (for Office)		173	2	346		
7.	Toilets (for Reception)		76				
8.	Staircase		210	2	420		

4.1.3 Residential Block

The residential block is an important part of the training center which includes accommodation for both trainees and trainers, guest house for higher officers, accommodation for administrative wing staffs, large dining hall and a lounge facility.

Table 4:Residential Block Function-wise Area

SL. No.	Function	No. of Users in per sqft	Net Unit Area	No. of Unit	Area in sqft (Building)	Area in sqft (Shed)	Area in sqft (Open Sky)
1.	Trainees Accommodation	100	346	50	17300		
2.	Trainers Accommodation	16	346	8	2768		
3.	Guest Accommodation	16	346	8	2768		
4.	Administrative Staff Accommodation						
a	Director's Residence		1800	1	1800		
b	Deputy Director's Residence		1500	1	1500		
c	Senior Staff	8	346	4	1384		
d	Junior Staff	12	346	4	1384		
5.	Dining Hall	140	2069	1	2069		
6.	Lounge		964	1	964		
7.	Kitchen (with storage / Pantry)		515	1	515		
8.	Laundry		155	1	155		
9.	Toilets(Lounge)		178	2	356		
10.	Toilets (Staff accommodation)		231	1	231		
11.	Staircase		210	12	2520		

4.1.4 Recreational Block

Recreation is an important part of any academic facility. The Central Training Center of LGED will include a swimming pool, an equipped gymnasium, indoor game facilities, outdoor game fields and Toilets.

Table 5: Recreational Block Function-wise Area

SL. No.	Function	No. of Users in per sqft	Net Unit Area	No. of Unit	Area in sqft (Building)	Area in sqft (Shed)	Area in sqft(Open Sky)
1.	Swimming Pool		1225	1			1225
2.	Gymnasium		1200	1	1200		
3.	Indoor games		1200	1	1200		
4.	Outdoor games		4740	1			4740
5.	Mosque		6304	1	6304		
6.	Toilets		480	2	960		

4.1.5 Healthcare Facility

The healthcare facility will have a doctor's chamber, a nursing facility and toilets. Trainees can avail any kind of primary healthcare from this facility.

Table 6: Healthcare Facility Function-wise Area

SL. No.	Function	No. of Users in per sqft	Net Unit Area	No. of Unit	Area in sqft (Building)	Area in sqft (Shed)	Area in sqft(Open Sky)
1.	Doctor's Chamber		120	1	120		
2.	Nursing facility		120	1	120		
3.	Toilets		25	2	50		

4.1.6 Utility and Services

Utilities like security and surveillance, guard room, fire control room, electricity supply, waste management, water supply, parking, roads and walkway etc. will be there in the facility.

Table 7: Utility & Services Function-wise Area

SL. No.	Function	No. of Users in per sqft	Net Unit Area	No. of Unit	Area in sqft (Building)	Area in sqft (Shed)	Area in sqft (Open Sky)
1.	Security and Surveillance		208	1	208		
2.	Fire control Room		60	1	60		
3.	Guard Room		60	1	60		
4.	Electricit ysupply		800	1	800		
5.	waste management						
6.	water supply						
7.	Parking facility						14600
8.	Roads and walkway						

4.2 Area coverage of CTC (Block wise)

The total functional spaces have been divided into 14 blocks that will cover all utilities includingacademic, administrative, healthcare, recreational etc.

Table 8: Functional Space-wise Area

Sl. No.	Functional Space	Area in sqm
1	Block 1 Administration (Ground floor + 1st floor)	732
2	Block 2 Academic (Ground floor + 1st + 2nd floor)	2,142
3	Block 3 Lounge + Healthcare Facility (Ground floor + 1st floor)	500
4	Block 4 Dining + Multipurpose (Ground floor + 1st floor)	900
5	Block 5 Shop/Salon + Indoor Games (Ground floor + 1st floor)	498
6	Block 6 Dormitory for Trainees and Trainers (Ground floor + 1st + 2nd+ 3rd floor)	3,701
7	Block 7 Staff Dormitory (Middle Level)(Ground floor + 1st floor)	508
8	Block 7 Staff Dormitory (Lower Level)(Ground floor + 1st floor)	542
9	Block 9 Director's Residence	223
10	Block 10 Deputy Director's Residence	168
11	Block 11 Mosque	586
12	Block 12 Material Storage	179
13	Block 13 Guard Room & Surveillance	85
14	Block 14 Generator & Substation + Fire Control	172
15	Block 7 Covered Parking + Vehicle Repair	517
11	Block 11 Deep Tube Well, Pump Room and Overhead Water Tank	40
	TOTAL SQM	**11,493**

4.3 SWOT Analysis

Strengths

- Site forces
- Large forest land (Shalbon) area on the west side.
- Strong road connectivity and availability of service road from the main highway road
- Two-hour distance from the capital, Dhaka City.
- Buffer zone of paddy field on the west side of the site.

Weaknesses

- Hard to identify the access from primary and secondary road
- Dust and pollution
- Daily commodity shop far away from site
- Service road is very narrow

Opportunities

- Agricultural land
- Local labor- for service
- Enhancing forest quality
- Water reservoir
- Using existing pond

Threats

- Industrialization
- Heavy traffic
- Deforestation
- Water level rises during rainy season
- Difficult corners to work with

Chapter 5

Case Studies

We use case studies as illustrative examples to show which advantages and disadvantages can be expected from a specific design. It is very important to analyze existing projects of similar programs and criteria before the starting off the design process of a project. Because these existing, functioning projects will help in understanding the quality of spaces, zoning, functions and distribution of the programs accurately. The case studies for this project have been selected based on similarities of programs and setting.Some case studies at national and international level have been done to understand the project more clearly. These studies helped to perceive the concept of function, context, circulation and some other aspects of a training center properly.

5.1 Local Case Study

BARD, Cumilla, Bangladesh (1959)

Name of the Project: BARD, Cumilla, Bangladesh

Location: Kotbari, Cumilla; $23^0$25'N $91^0$8'E

Architect: Constantinos Apostolou Doxiadis (Greek urban planner, architect, and theorist, (1913-1975)

Size: 0.631 Km^2 (0.244 sq. miles)

Building Type: Institutional

5.1.1 Introduction & Brief History

Bangladesh Academy for Rural Development (BARD) is an autonomous national institution for training, research and experiment on rural development. It is the largest and the pioneering Rural Development Academy in Bangladesh. BARD was established in 1959 in Cumilla by Dr. Akhter Hameed. Dr. The founder director of BARD, along with some researchers carried out continuous experiments with rural people and developed some model programs for rural development in this country. In the early sixties, the problems that were prevalent in rural areas were identified. The priorities of these programs are:

1. Creating a sustainable organization in the village,
2. Creating personal and collective capital,
3. Infrastructure development,
4. Expansion of advanced agricultural technology,

5. Expansion of social development activities including health, education, family planning, women's education,
6. Creating an organized village society with the help of people from all levels of the village,
7. Employment for landless laborers in non-agricultural sector,
8. Establish effective communication with the village and the outside world and
9. Innovation is an effective way to reach government service villages.

In order to effectively implement these six priorities, the Academy took initiative in the sixties.

One of the mandatory functions of BARD is to provide training for both officials and non-officials. During 1959-1988, a total of about 118000 participants attended various training courses, visit programs, workshops and seminars conducted by the Academy. Located at Kotbari, 10 km off Cumilla town, BARD has a very entertaining campus of 156 acres of land in natural surroundings.

5.1.2 Specifications

-Training institute for government officers

-Disperse building block

-Environmental consideration

Bangladesh Academy for Rural Development (BARD) is an architecturally important complex in Cumilla which is designed by architect Constantinos Apostolou Doxiadis (Greek urban planner, architect and the theorist, 1913-1975), who is the architect of Dhaka University T.S.C and Home Economics College.

Doxiadis was rigidly a Universalist. He rejected all sorts of symbolism or any sentimental elements in design. To him, buildings should be machine-like. So for him to incorporate the dochala form seem like an aberration. It was his attempt to be experimental, in order to bring some regional characteristics to design.

“Having the dochala form in the mosque was a small way of reminding the people visiting the mosque of their rural roots.”- Constantinos Apostolou Doxiadis.

Figure 32: Cumilla BARD

Figure 33: Corridor of main Building

5.1.3 Climate & Environment

Space syntax in BARD addressing the tropical climate with a losses planning that ensures uninterrupted ventilation. The reference from the contextually of our region is evident through the usage of dochala in Cumilla BARD. The predominant north-south orientation of the buildings, the use of lush landscape based on local trees and plants and the treatment of the façade- characterized by thin columns and shadow-casting devices together with the wide windows having ingeniously designed fixtures to make it possible to open up the entire south façade- are all driven by climatic sensitivity.

-Less compact to ensure uninterrupted cross ventilation

-Characterized by lightness, low density, large windows to ensure ample cross ventilation and projected sunshades

-Usage of dochala atop the auditorium

-Surrounding road on low embankment to protect from flood

Figure 34: Cumilla BARD Development Center in the 90's

Figure 36: Cumilla BARD Development Center

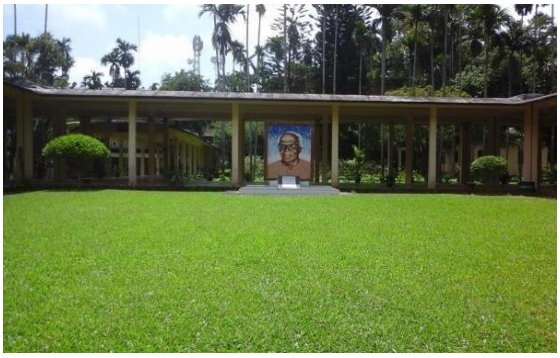

Figure 35: BARD Playground

Figure 37: Sports & Recreation Center

Structural features

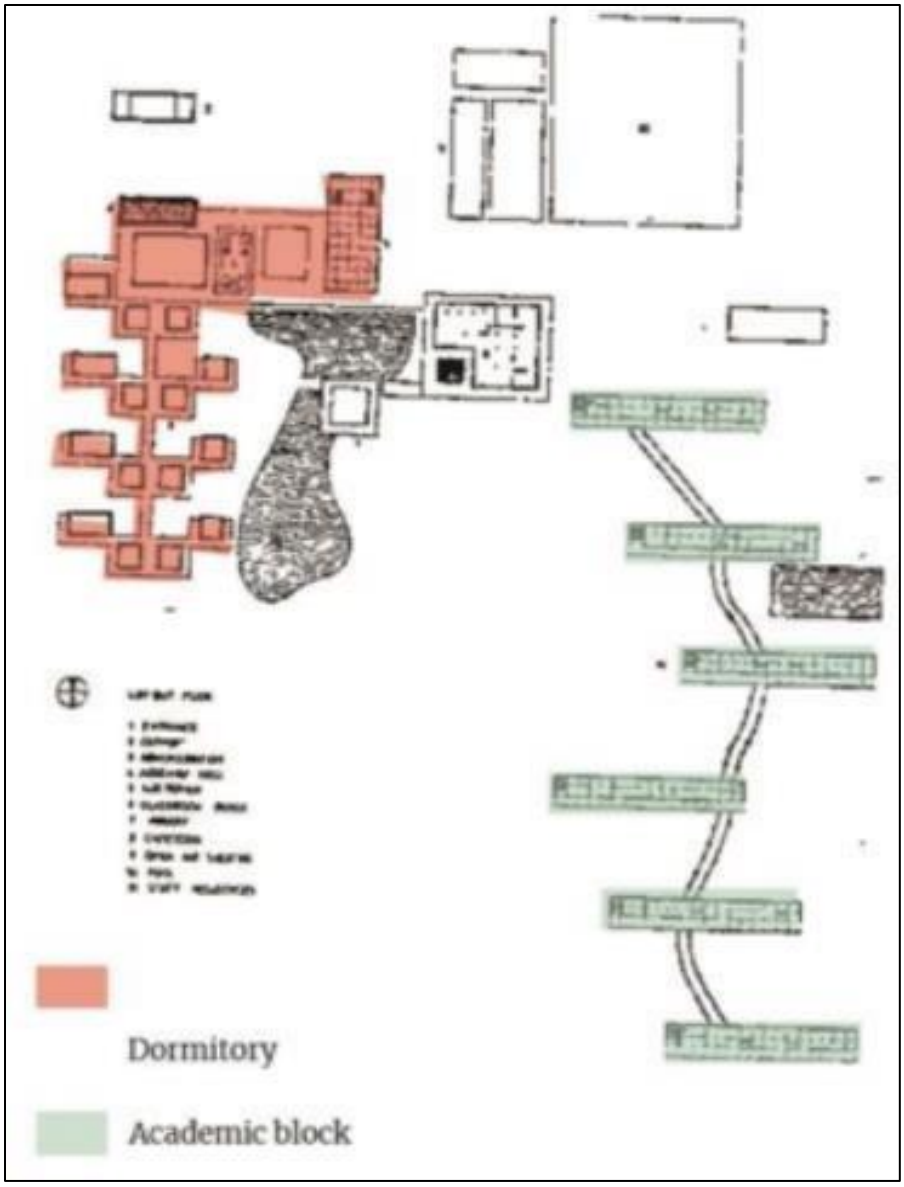

Figure 38: Plan View of BARD

-Three to four storey building blocks.

-Linear coloumn span of 11'- 11'4" depending upon space.

-Large windows on the north façade.

-Corridor cuts out the landscape into courtyards.

Figure 39: Features of Cumilla BARD

5.1.4 Surrounding Landscape of BARD, Cumilla

-Courts are created with the circulation path of the shaded corridor.

-Level change of the concrete to green breaks the monotony of long corridors.

- Elements of landscape used are:

1. Retaining wall,
2. Paths,
3. Plantation.

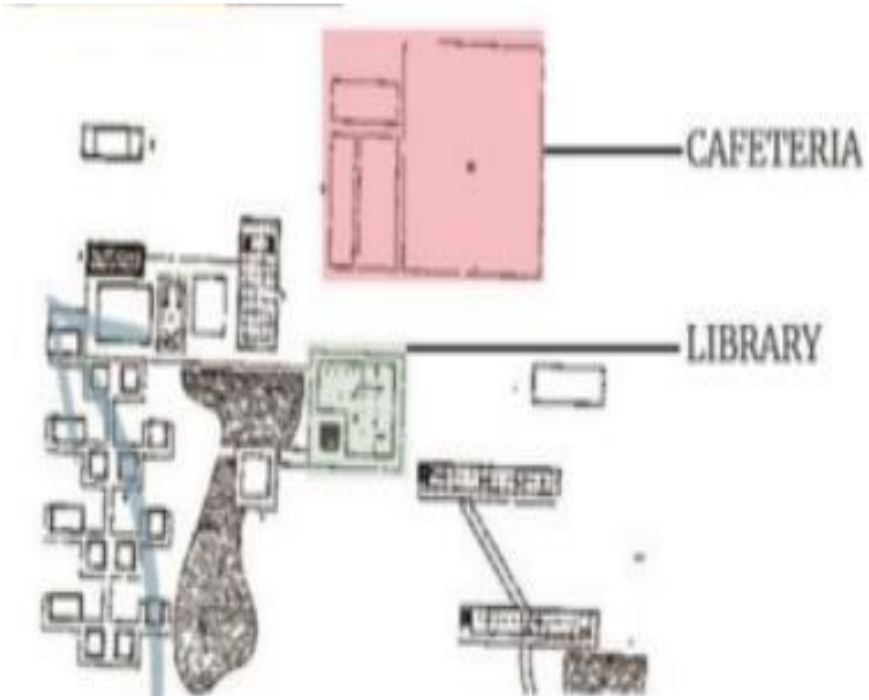

Figure 40: Landscape of Cumilla BARD

5.1.5 Analysis

- Planning is done keeping the scope for future expansion for both residence and academic purpose. Thus, the plan seems incomplete.

-Design is in scattered manner which eventually giving hierarchy to library and cafeteria being in the center.

-Repetition is distinct in this project as the classroom and residence are place in repetition.

-Even though the residence is placed in North south orientation, cross ventilation is inadequate due to obstacle of the service block.

5.1.6 Conclusion

The BARD is now-a-days known as resourceful training center for the first-class officers of the government of Bangladesh. Even employees of LGED receive their foundation training from this place. Many facilities of BARD can be seen as a role model for LGED's Central Training Center. This project analyzed about the training center and dormitory pattern which is an essential function of LGED project. This project helped to understand the site integration and functionality of the project.

5.2 National Case Study

IIM, Bangalore

Name of the Project: IIM, Bangalore

Location: Karnataka, Bangalore; 12°58′N 77°34′E

Architect/ Firm: B. V. Doshi

Size: 741 Km^2 (286 sq. m)

Building Type: Institutional

Figure 41: IIM, Bangalore

5.2.1 Climate & Environment

Designed by B. V. Doshi, the IIM, is an institutional project. Located in the South Indianstate of Karnataka, the site is at an elevation of 900m. The 54,000 sqm IIM complex is constructed on a 100-acre land with unique architectural techniques. Mr. B.V. Doshi based the design on the town of FATEPUR SIKHRI that was constructed by Ancient Emperor Badshah Akbar in the last part of the Sixteenth century. The magnificent work was done by linking a network of courtyard, corridors, and external spaces for further extension in future. The external links & spaces between the buildings produce an academic exchange beyond the wide opened classrooms. The design was developed by the critical analysis of the sun-path diagram and following the VASTU SHASTRA. It is said to be a perfect blend of modern and traditional architecture. The usage of exposed concrete, lattices and open wall system makes the design simple but unique. The building has a lower maintenance and is always cool and has a decent amount of controlled light. Local materials have also been used in this project.

Figure 42: Light & Ventilation of IIM

Figure 43: Front part of IIM

The Facilities available includes

- School
- Kitchen and dining block
- Dormitories
- Transit housing
- MDP Centre
- Faculty housing
- Staff housing
- Married student housing
- Community facilities
- Parking

Figure 44: Perspective View Academic Block , IIM, Bangalore

5.2.2 Form and Functions

The design enlightens the architect's sense of proportion. Light plays an important rolein this project. For this the logo portrays the rays of the blazing sun. According to Mr. B. V. Doshithe design was to create an atmosphere where one cannot see divides and doors. The corridors provide access to the magnificent classrooms and admin office. Students and faculty memberscan experience the nature from the classrooms. The design is made in such a way that it creates the scope of conserving energy, enhancing technology & to accept and use the innovative ways of modern buildings. Important features include, storied hallways, ample amount of space for green, and a textured finish on all the surfaces.

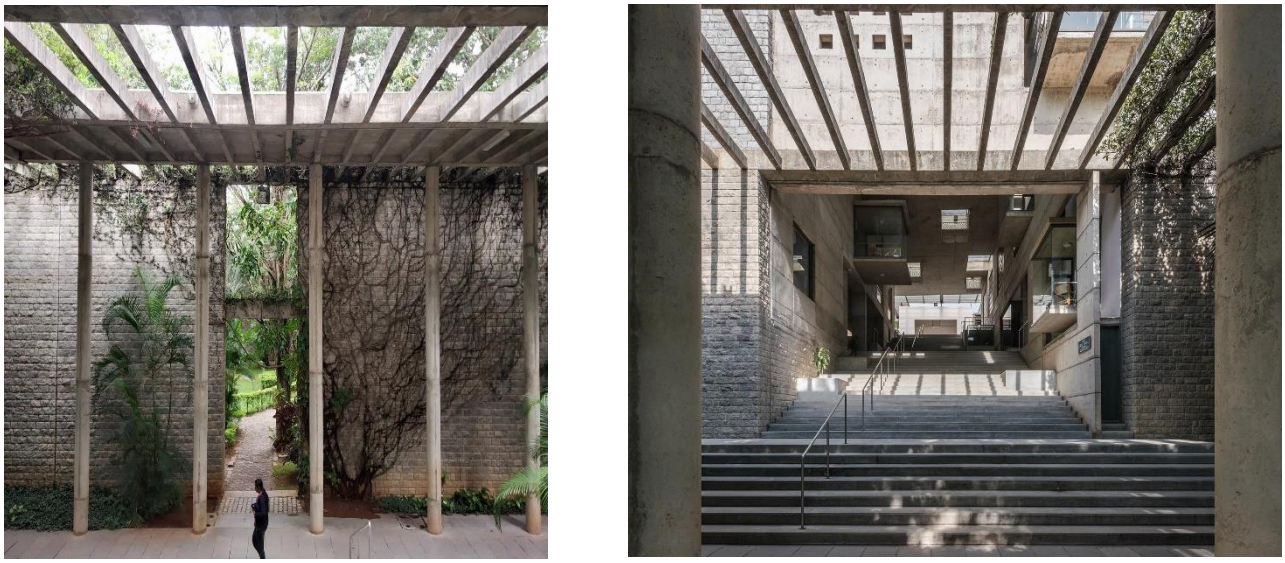

Figure 45: Corridors & Stairs Covered with Pergolas

Figure 46: Atrium in Library for Natural Light

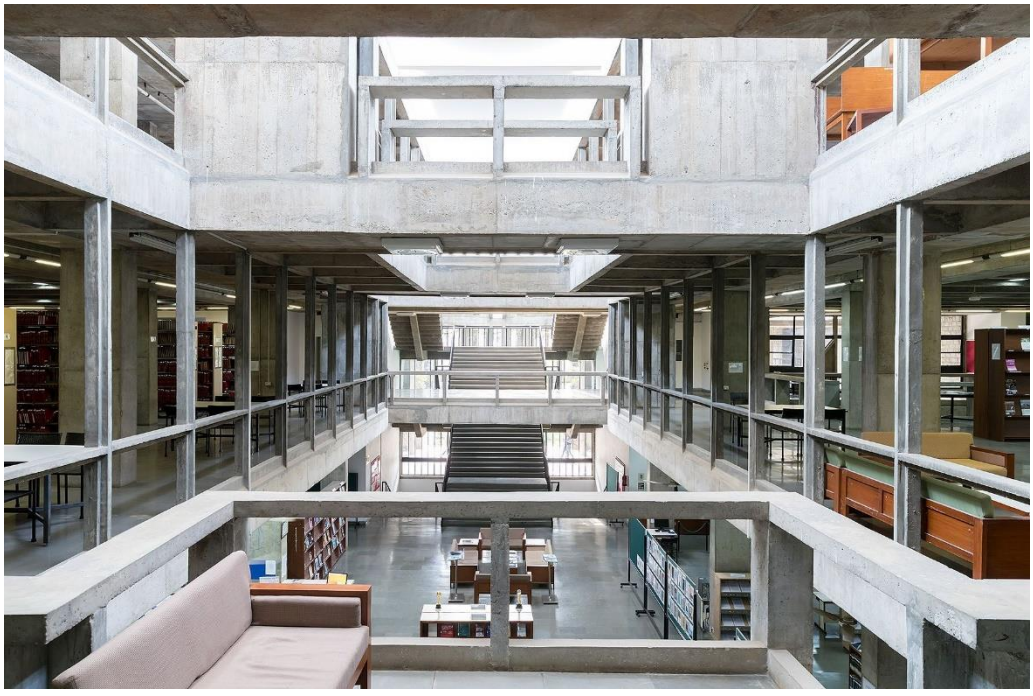

Figure 47: Corridors with Natural Light & Ventilation

B V Doshi took inspirations from the gardens of Fatehpur Sikri and merged that concept in the courtyards of the campus. He made green corridors instead of dry ones that have access to the courtyards.

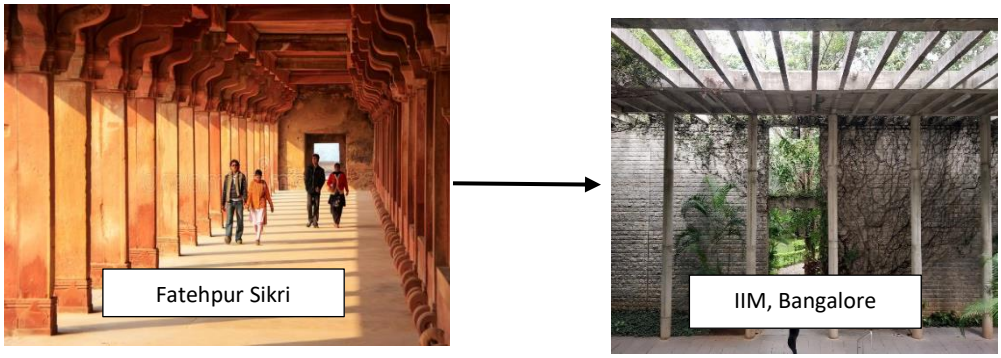

Figure 48: Design Inspirations from The Fatehpur Sikri

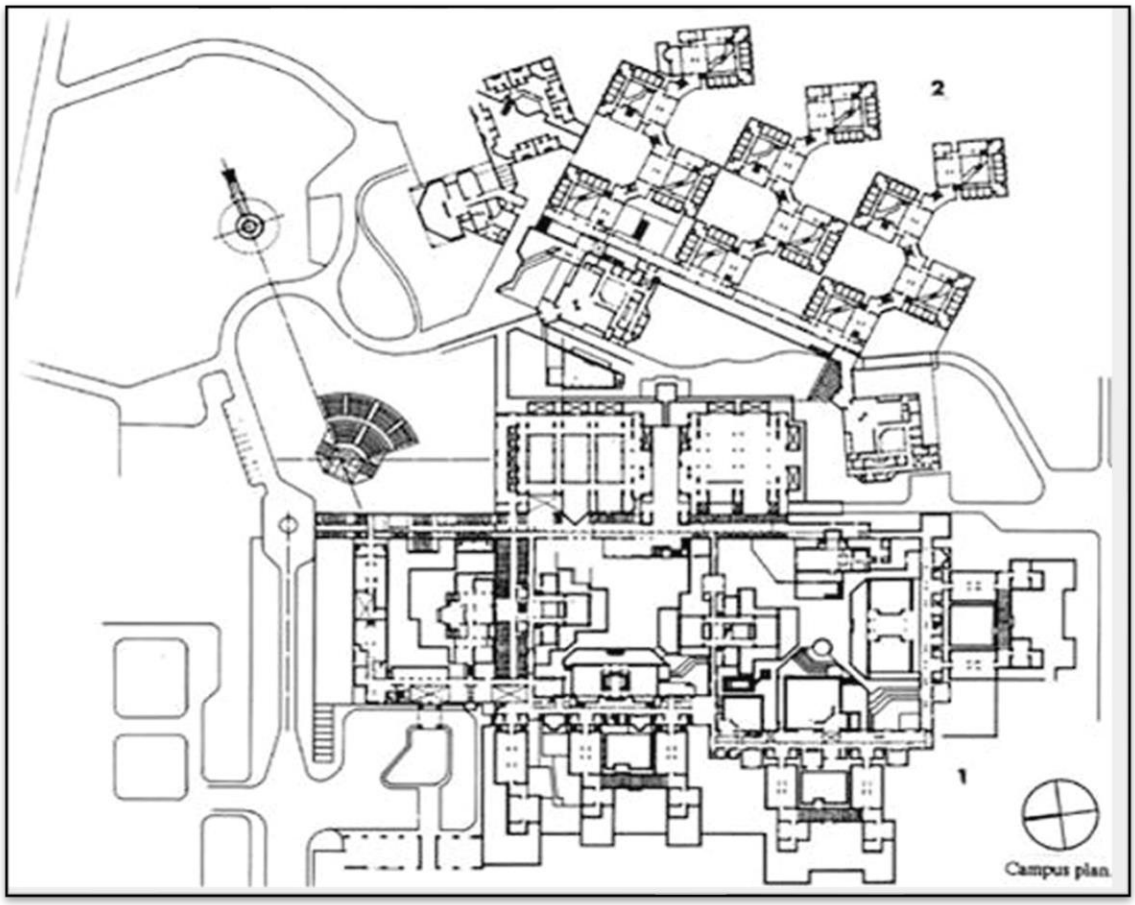

Figure 49: Entire Campus Plan

Figure 50: Open Corridors

Figure 51: Arial view of IIM, Bangalore

Figure 52: Greenery in IIM, Bangalore

5.2.3 Horizontal and Vertical Circulation

Vehicular movement is well integrated with the zoning of various activities. Pedestrian movement is dominating within the academic complex and student's dormitories. The complex is achieved by adoptinga network of corridors linking together all volumes, courtyards and external spaces. Three entrances, fromfirst, one entrances to staff housing and education spaces. Second a small entrance to staff housing only andthe third one is the service entry from southern side road. The corridors provide access to the classrooms and administration offices. The students and faculty can see and experience the nature from classrooms. BV Doshi took inspirations from the gardens of Fatehpur Sikri and merged that concept in the courtyards ofthe campus. He made green corridors instead of dry ones that have access to the courtyards.

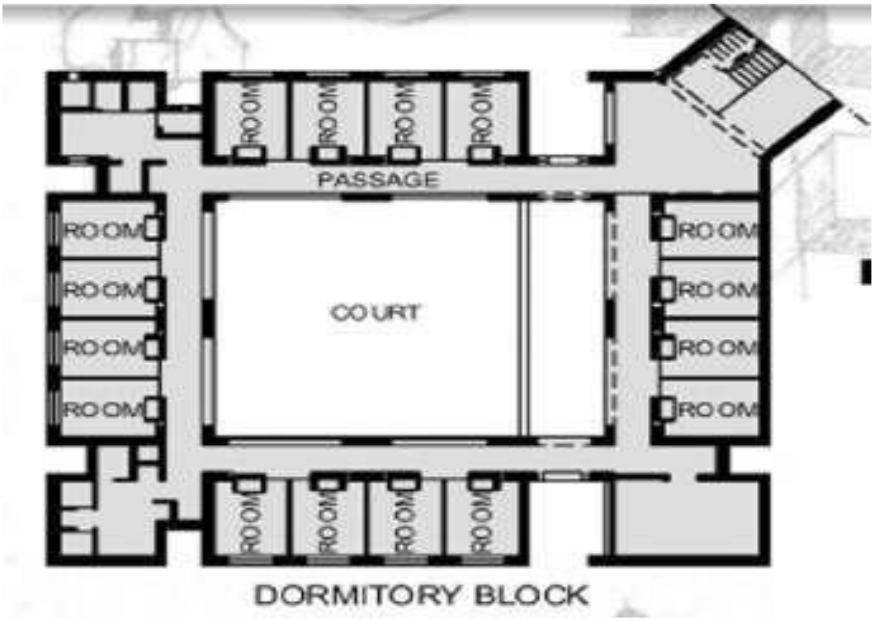

Figure 53: Horizontal and Vertical Circulation

5.2.4 Conclusions

The project is like that of Author's topic of interest. LGED training center will also provide similar facilities and function. The project talks about its relationship with the design concept with that of an historical building. The designer concentrated on the experience of the user along with the functions of theinstitution. The size of the project more than LGED but it is accommodating more than twice as much as staff and trainee as LGED. The program of this project is similar to that of the author's project and this project helped and gave a clear idea of the orientation of its function and the series in which it is laid out. This case study can not only be referred when it comes to aesthetics and architectural features, but it can be also used as a reference while placing the functions in the site in terms of orientation and connections between functions.

5.3 International Case Study

SALK Institute, California

Name of the project: SALK institute, California

Architect: Louis I. Kahn

Location: La Jolla, California

Building Type: Research laboratories and offices

5.3.1 Climate & Environment

The Salk Institute for Biological Studies is a scientific research institute located in La Jolla, California. The project located in seaside where the climatic system is mild. It was a modern project designed by Louis Kahn. Salk created the campus to draw the best researchers in the world. The original buildings of the Salk Institute were considered as a historical landmark in 1991. The building type of the project is research laboratories and offices and is constructed using reinforced concrete system.

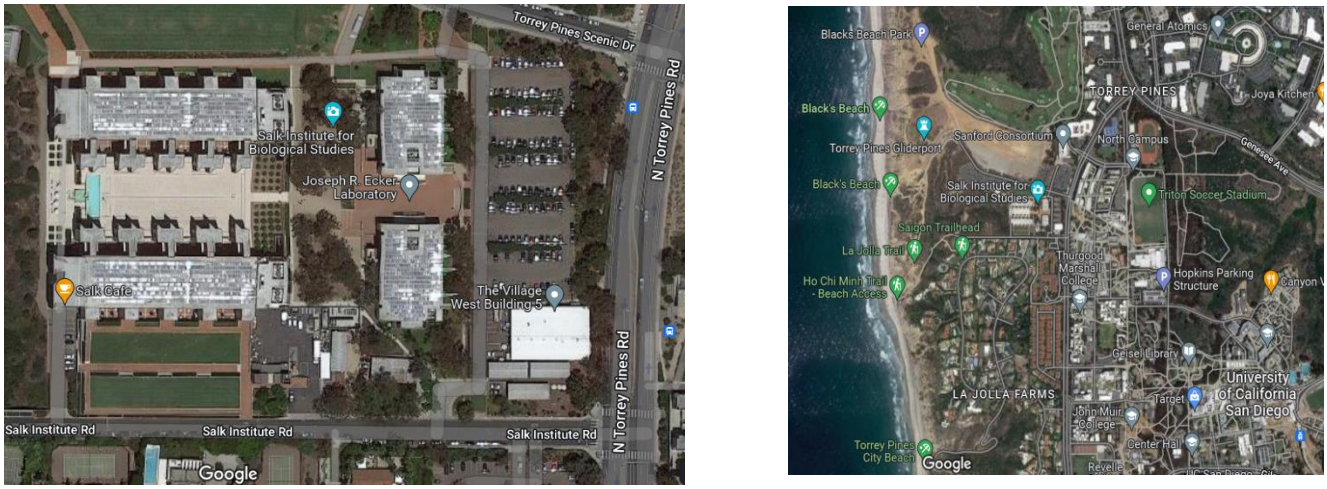

Figure 54: Location of Salk institute

5.3.2 Form and Functions

The design concept of ‘intellectual retreat came from the analysis and study of monasteries. The institute was design using the concept of mandala which means gaining hierarchy using geometric shapes. The Salk institute is made up of two blocks of building built in the edge of a cliff. The two buildings are symmetrical and the stream of water flows through the center courtyard separating it into two. The building has no separating walls for laboratories. The diagonal wall allows all 37 scientists to have a proper view to the Pacific Ocean from their study room. All the buildings are six storied in height. The first three floors are the laboratory while the other three have services and utilities. The laboratory blocks have 5 study towers.

Figure 55: The view east, revealing the buildings' teak elements, saw tooth design and reflecting pool

Each tower has 4 offices. In total there are 29 structures in this institute. Salk insisted the designer to create a welcoming environment forthe future research for the young architects. Kahn responded used immense amount of daylight. He designed all 4 outer walls of the laboratory using large, double-strength glass panes that produced an open work environment. As the code didn’t allow him to increase the height of the building, he took the first 2 floors underground. In order to bring day light, he designed a series oflight wells 40 feet long and 25 feet wide on both sides of each building.

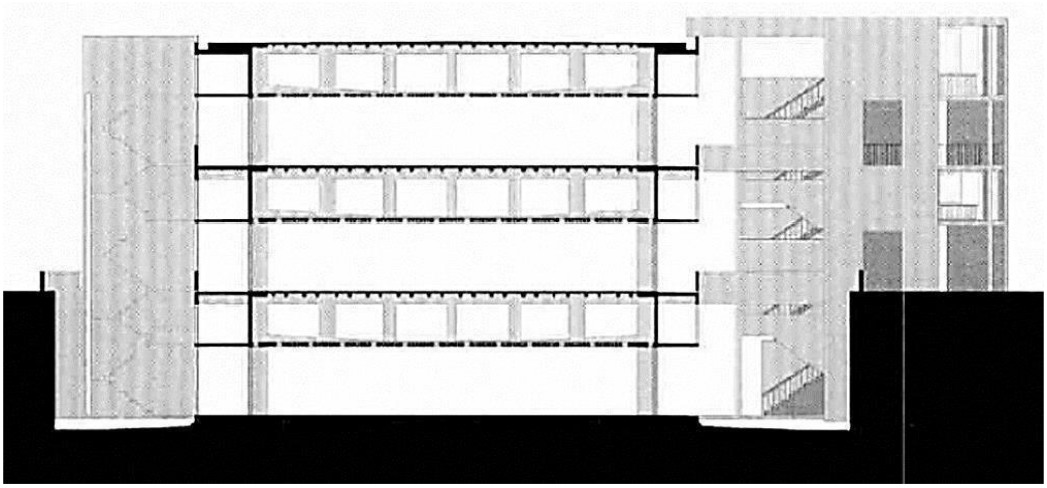

Figure 57: Sectional View

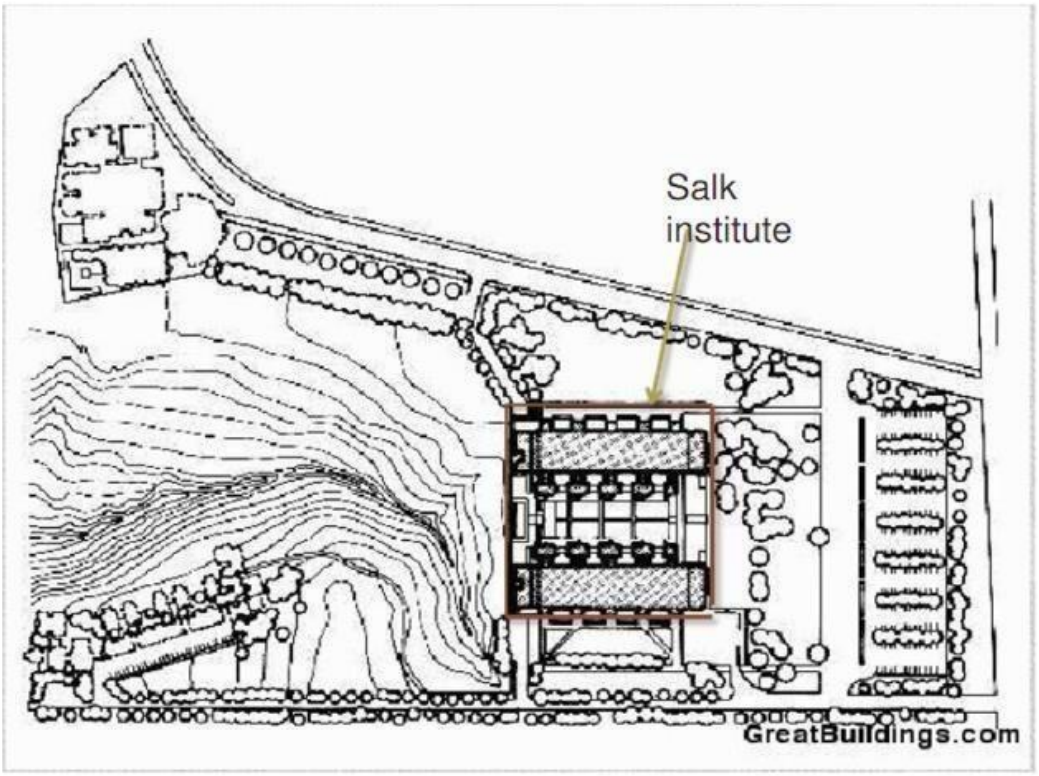

Figure 56: Plan View

Figure 59: Classroom and lab

Figure 58: Entrance

Figure 60: Lab & Office Interior

5.3.3 Materials Used

Salk institute used materials like concrete, teak, lead, glass, and steel. Roman technique was used to pour cement. The designer didn't allow to go for any further touches after the concrete was set in order to achieve a warm glow in the concrete. Travertine marble was used in the open plaza. There is a narrow strip of water that runs through the center of the plaza to the pacific. The designer used an unfinished look for towers and office windows.

Figure 61: Window Details

Figure 62: Concrete Walls Used

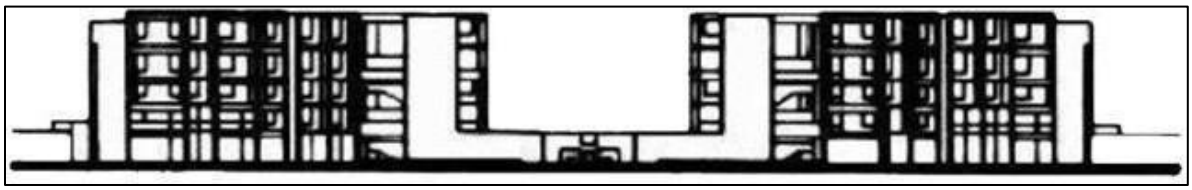

Figure 63: West elevation

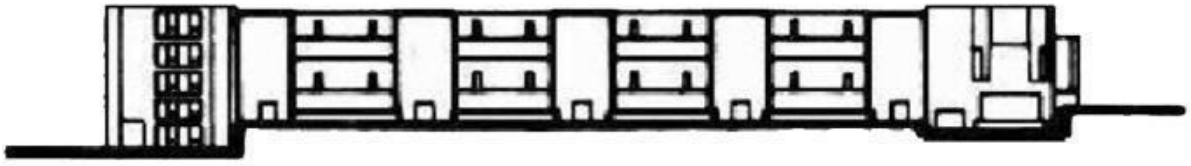

Figure 64: South elevation

Figure 65: Connecting Passageway

Figure 66: Courtyard

Figure 68: Courtyard space

Figure 67: External Photo with Facade

5.3.4 Conclusion

While designing LGED's central training center (CTC) the design concepts of Salk can be used as reference. His idea was to create a formal perfection and emotional expression that spiritually enhances the overall experience. He created a functional institutional building for a faculty withinan inspiring environment for scientific research. He implemented the idea of served and servant spaces by separating and hiding the mechanical and services area from the human space. Kahn maximized the daylight by taking advantage of the site location and oriented views to the Pacific Ocean. The materials he used are simple, strong and durable.

Figure 69: SALK Institute

Chapter 6

Design Suggestions

6.1 Concept & Form Development

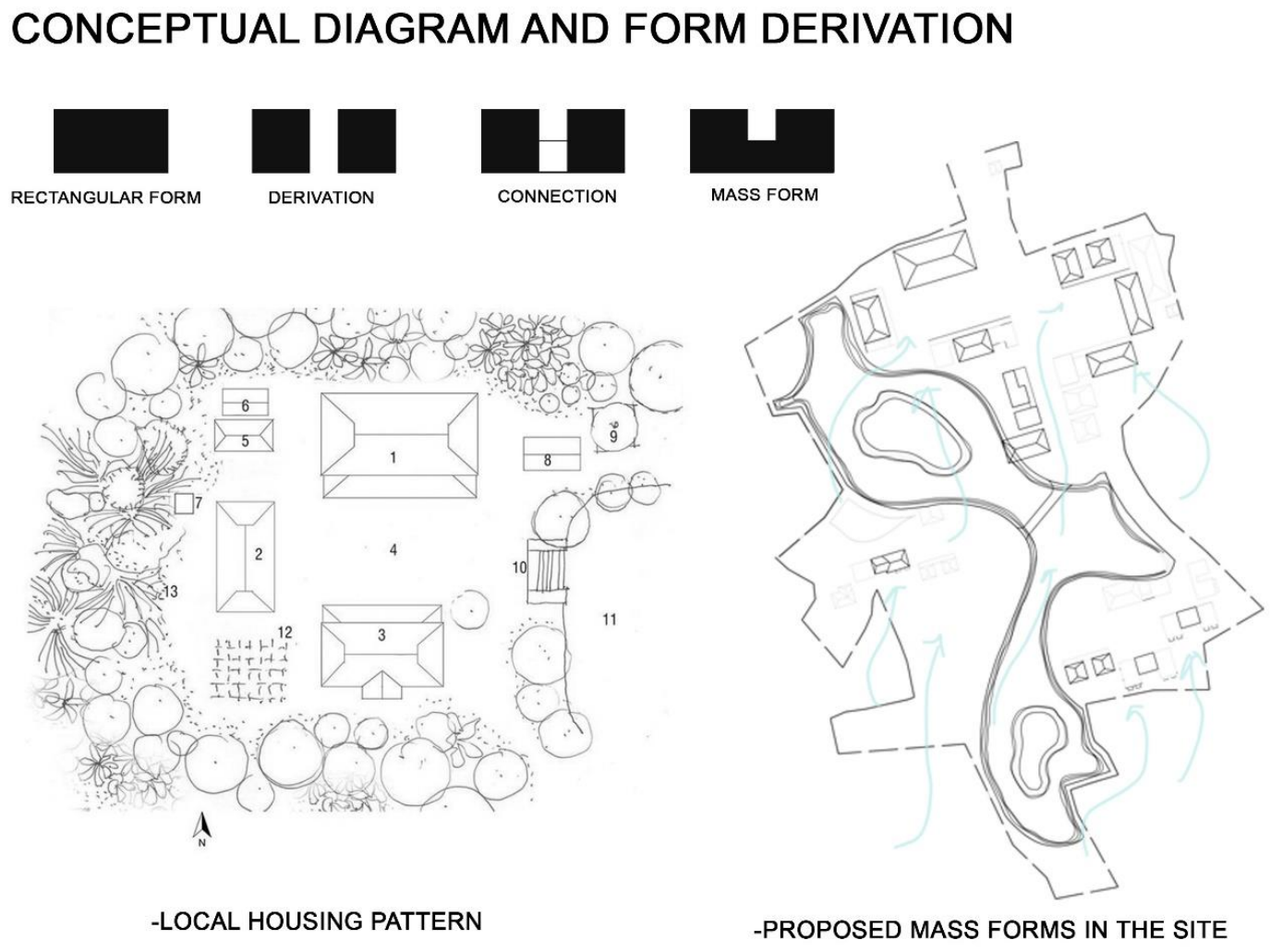

Figure 70: Conceptual Diagram & Form Derivation

-Incorporating local features. For example: local housing pattern, courtyard system interconnected mass, vegetation.
-Proposing to design mas forms in accordance with climatic consideration. For example: most of the masses are south-east facing so that the designed mass forms can get maximum wind flow to have a better natural ventilation system.

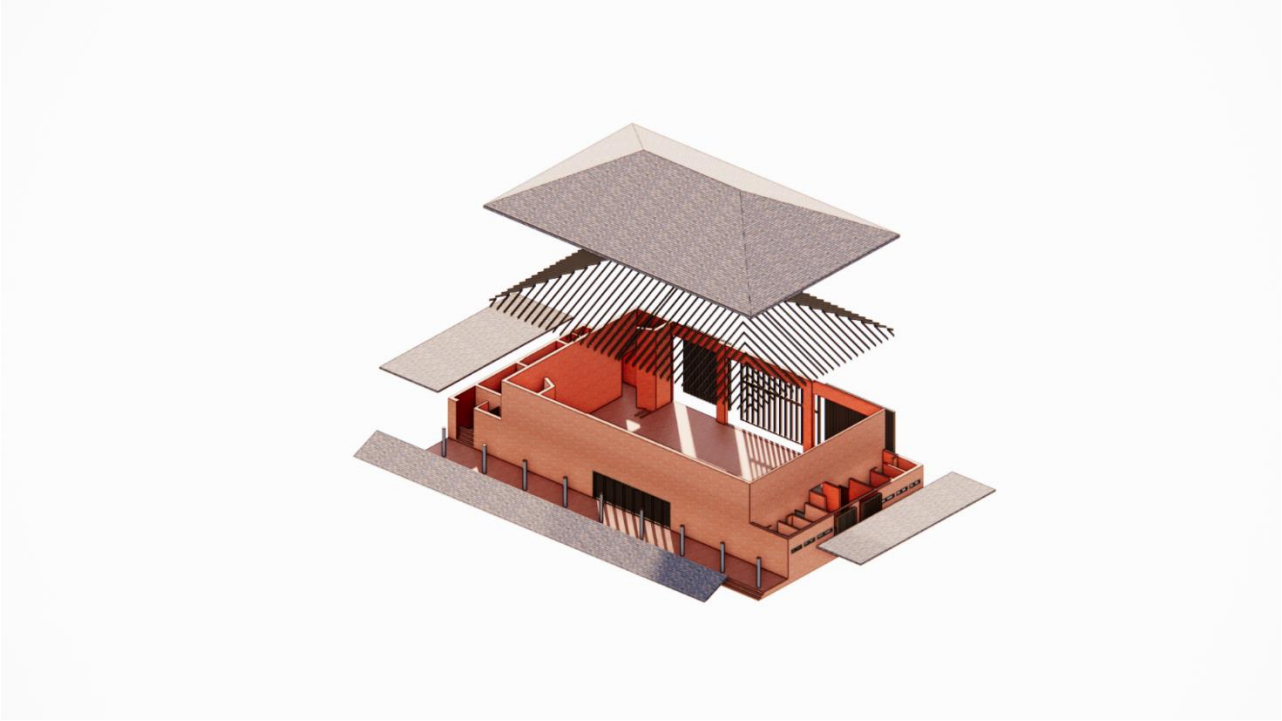

Figure 71: Blowup of a Typical Proposed Mass form

-Regenerate the existing lower ground level as a large pond area which can also accumulate with the regional context.
-Using of jail works made by brick blocks from local nearby brick fields, using off vertical louvre system to create more cooler interior spaces.

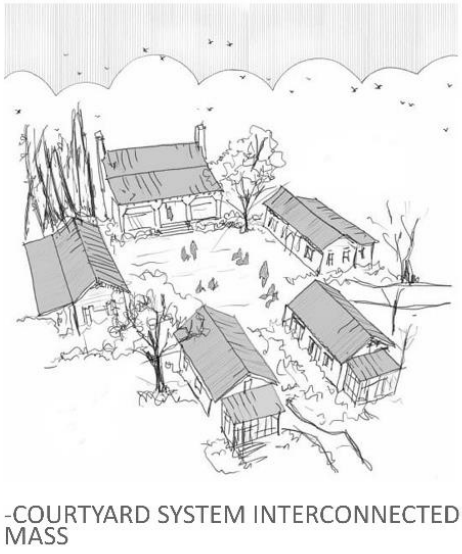

Figure 73: Courtyard System Interconnected Mass

Figure 72: Jaki Works using Blocks

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-Using of hip roofs and tally roofing system because of its sturdiness and rainfall can be easily driven off from the roof. The annual rainfall here is 2187 mm whereas the average rainfall rate is 990 mm.

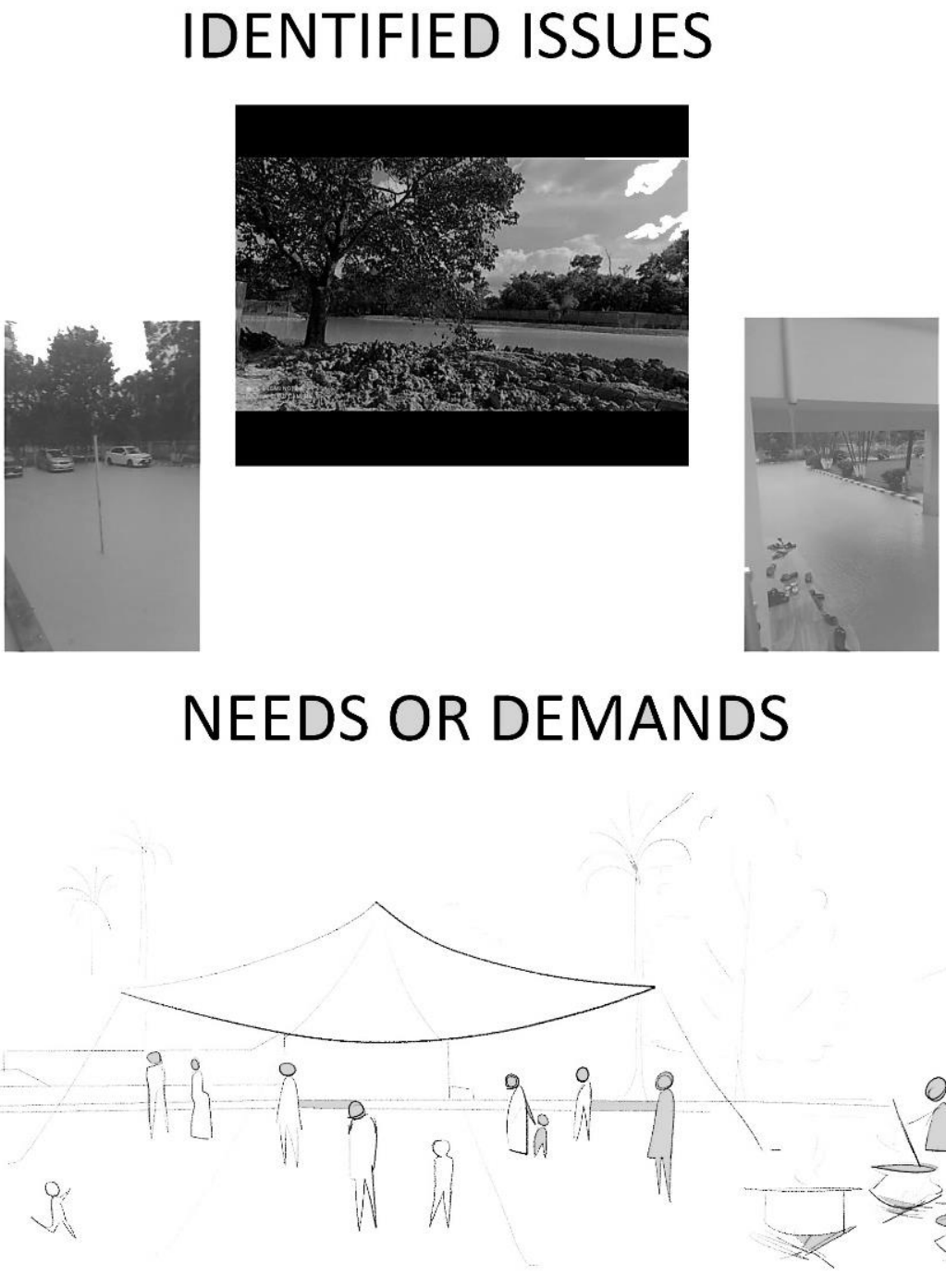


Figure 74: Issue Identification

Identified Issue

-Currently there is an excavation process going on for the IPCP project. They are filling up the area with the excavated mud to make the ground level higher. But as a result, water logging issue is occurring in the site whenever it rains heavily.

Identified need or demand

-There are shalbon, Gazari forest area around the site. It holds such a value of recreational purposes that the officials, staffs of LGED often hold picnic in this place. They have food fest here; they organize various games. Even higher official staff member come here with family and stay in the rest houses for days to have quality full family time. So, this place now has a demand of such recreational spaces.

6.2 Zoning

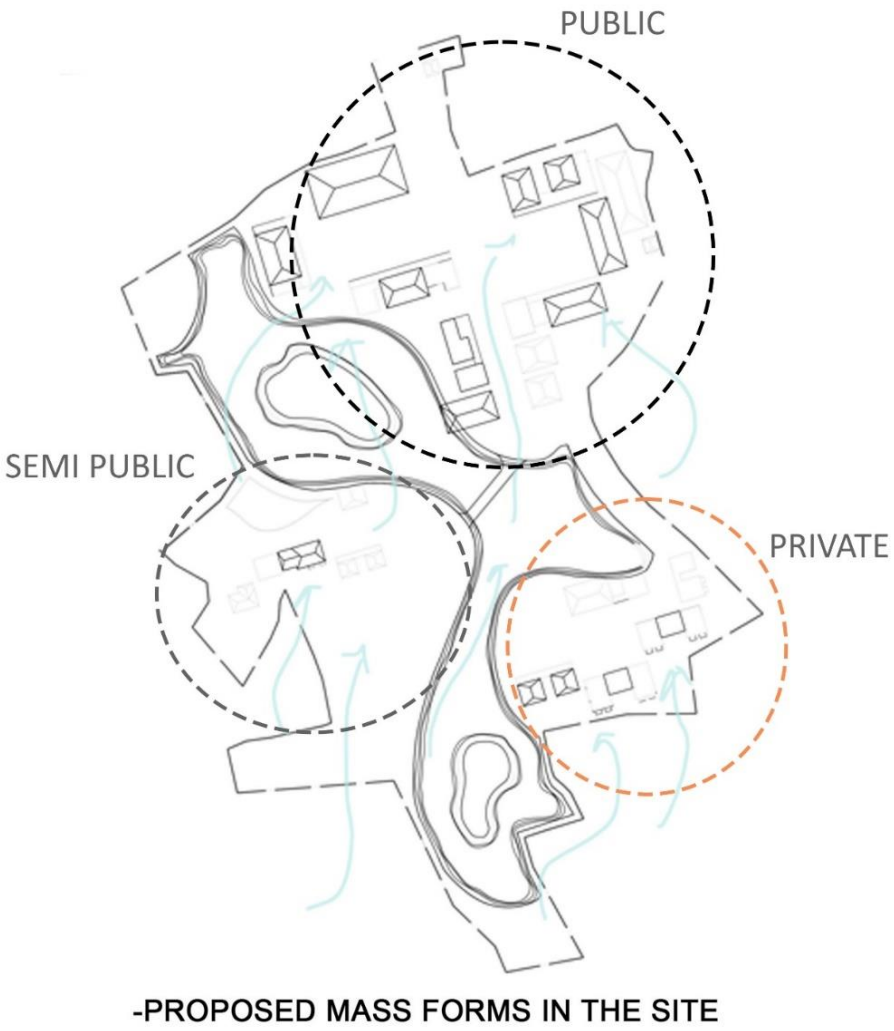


Figure 75: Proposed Mass forms in Site

- Zoning was done based on considering access of people and site surrounding conditions,
- Clustered system mass forms of interrelated different functions,
- Courtyard system interconnected mass forms.
- South-east facing mass forms for better wind flow access.

6.3 Floor Plans

a. Master Plan (Ground Floor)

Figure 76:: Ground Floor Master Plan

b. Ground Floor Plans

c. First Floor Plan

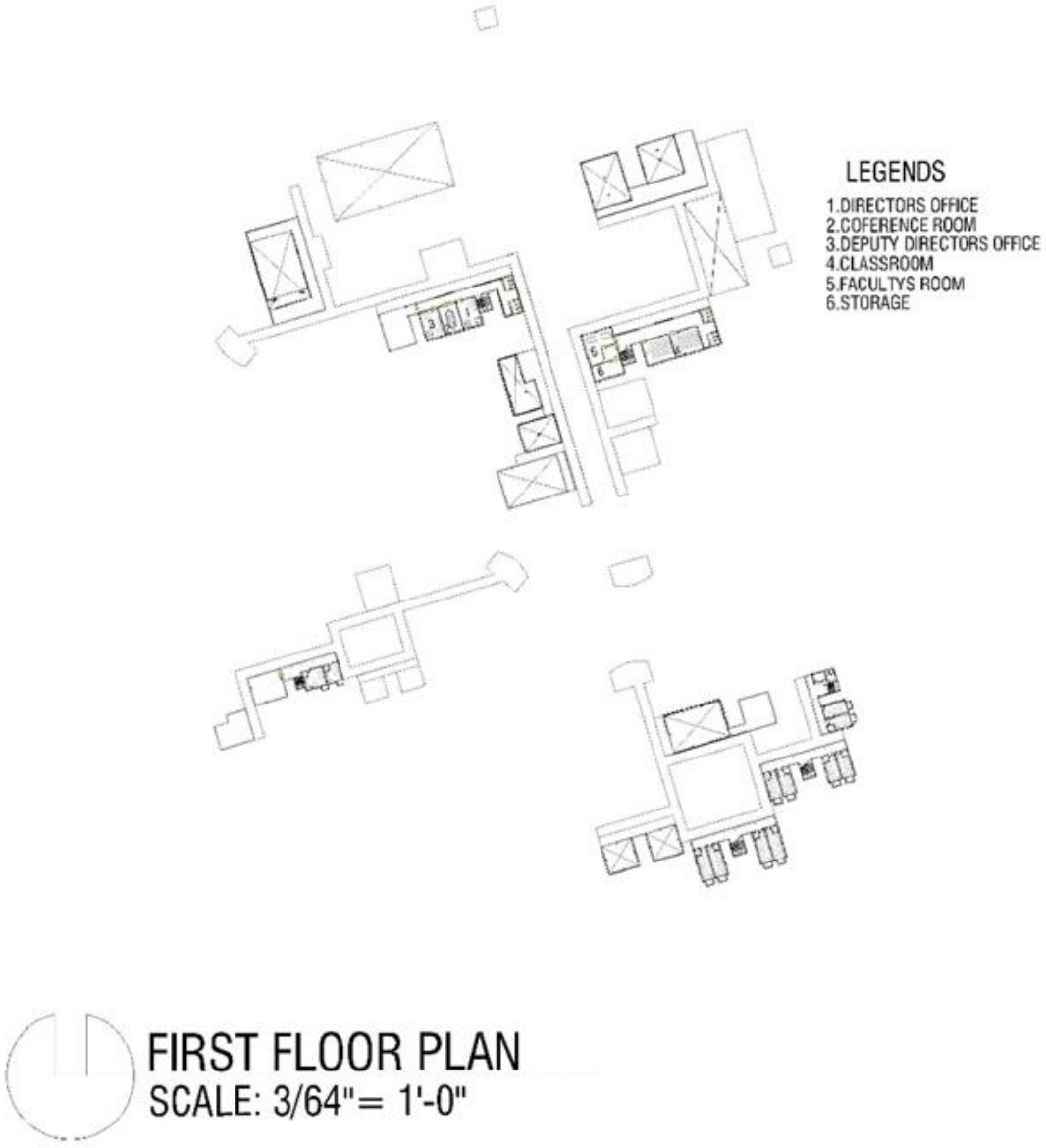


Figure 77: First Floor Plan

d. Second & Third Floor Plan

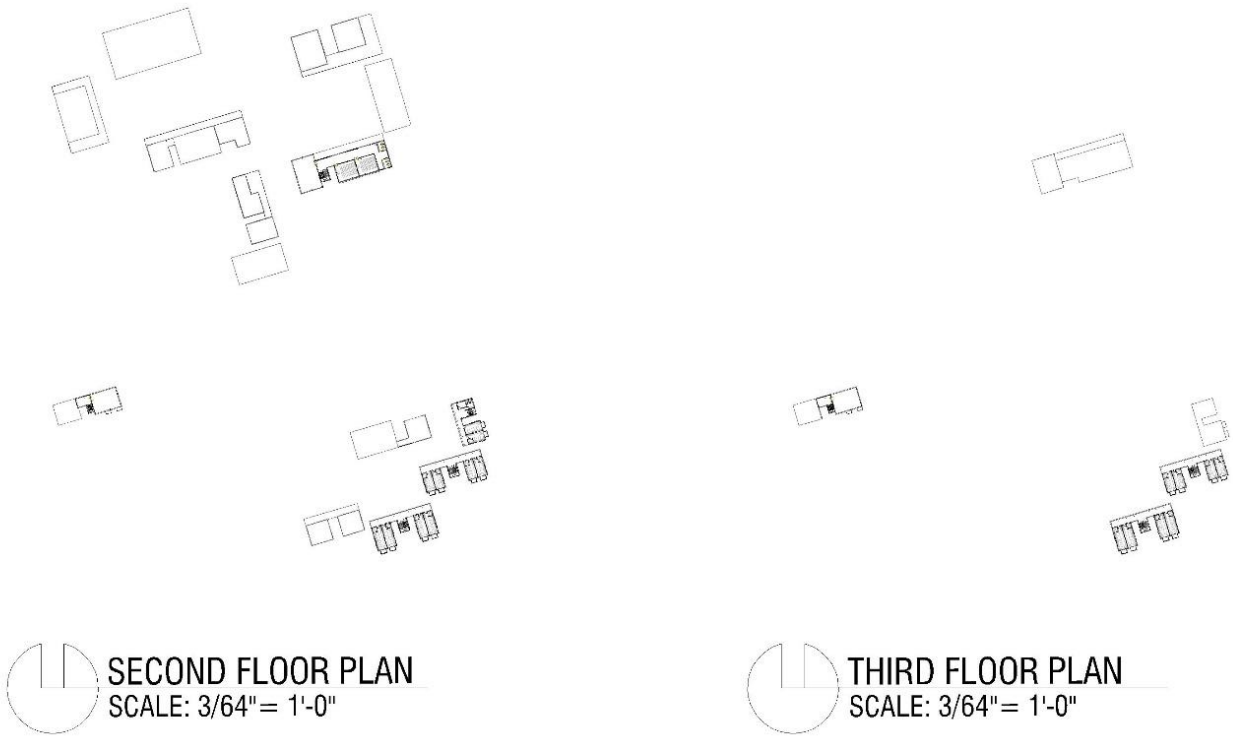


Figure 78: 2nd & 3rd Floor Plan

e. Fourth & Fifth Floor Plan

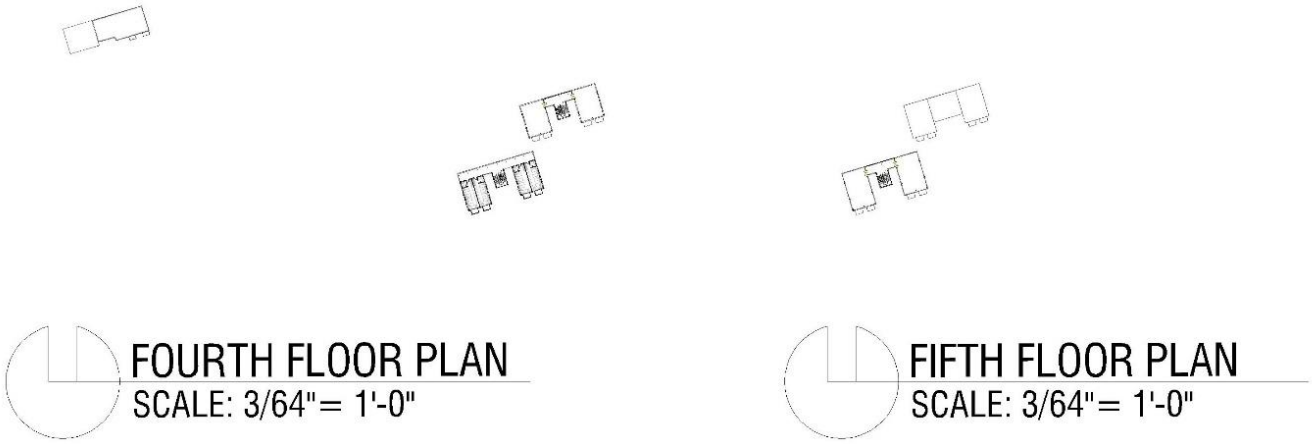


Figure 79: 4th & 5th Floor Plan

f. Roof Plan

Figure 80: Roof Plan

6.4 Elevations

Figure 81: South Elevation

Figure 82: East Elevation

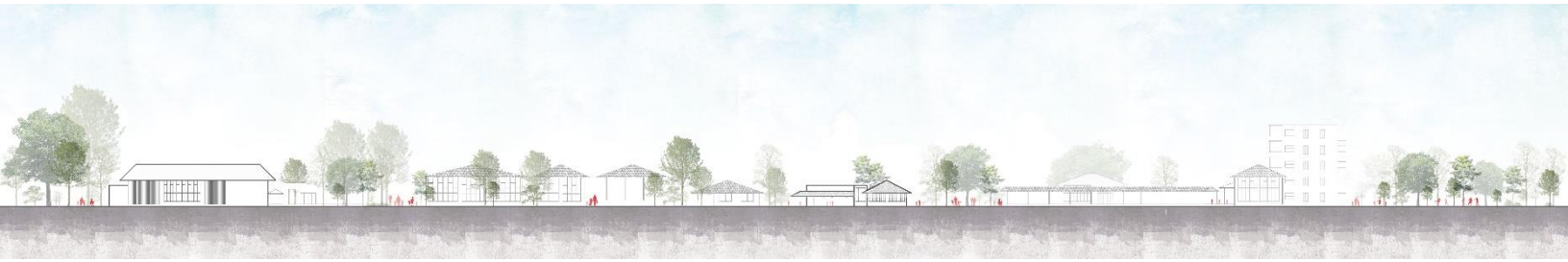
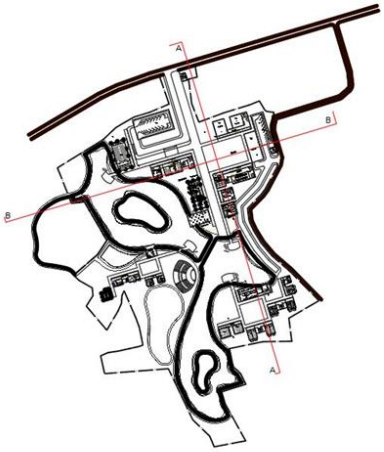


Figure 83: West Elevation

Figure 84: North Elevation

6.4 Sections



i. Sectional View (A-A)

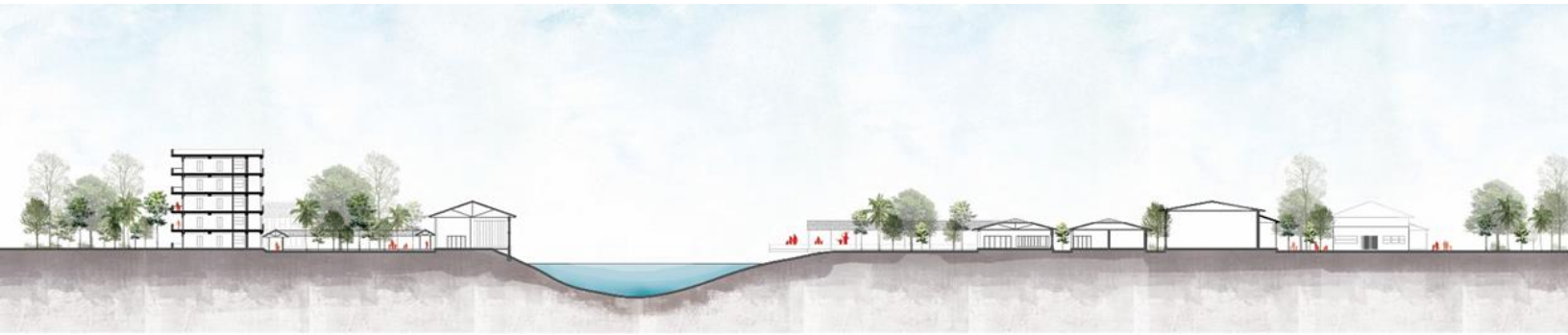


Figure 85: Section A-A

i. Sectional View (B-B)

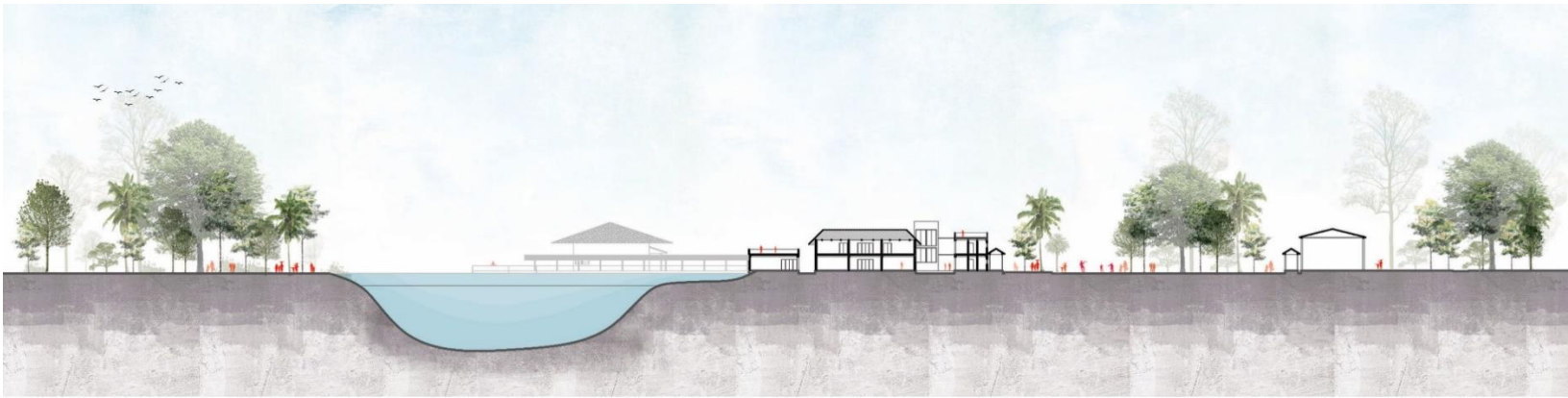


Figure 86: Section B-B

6.5 Three Dimensional Views

6.6 Sketches of Proposed Activities

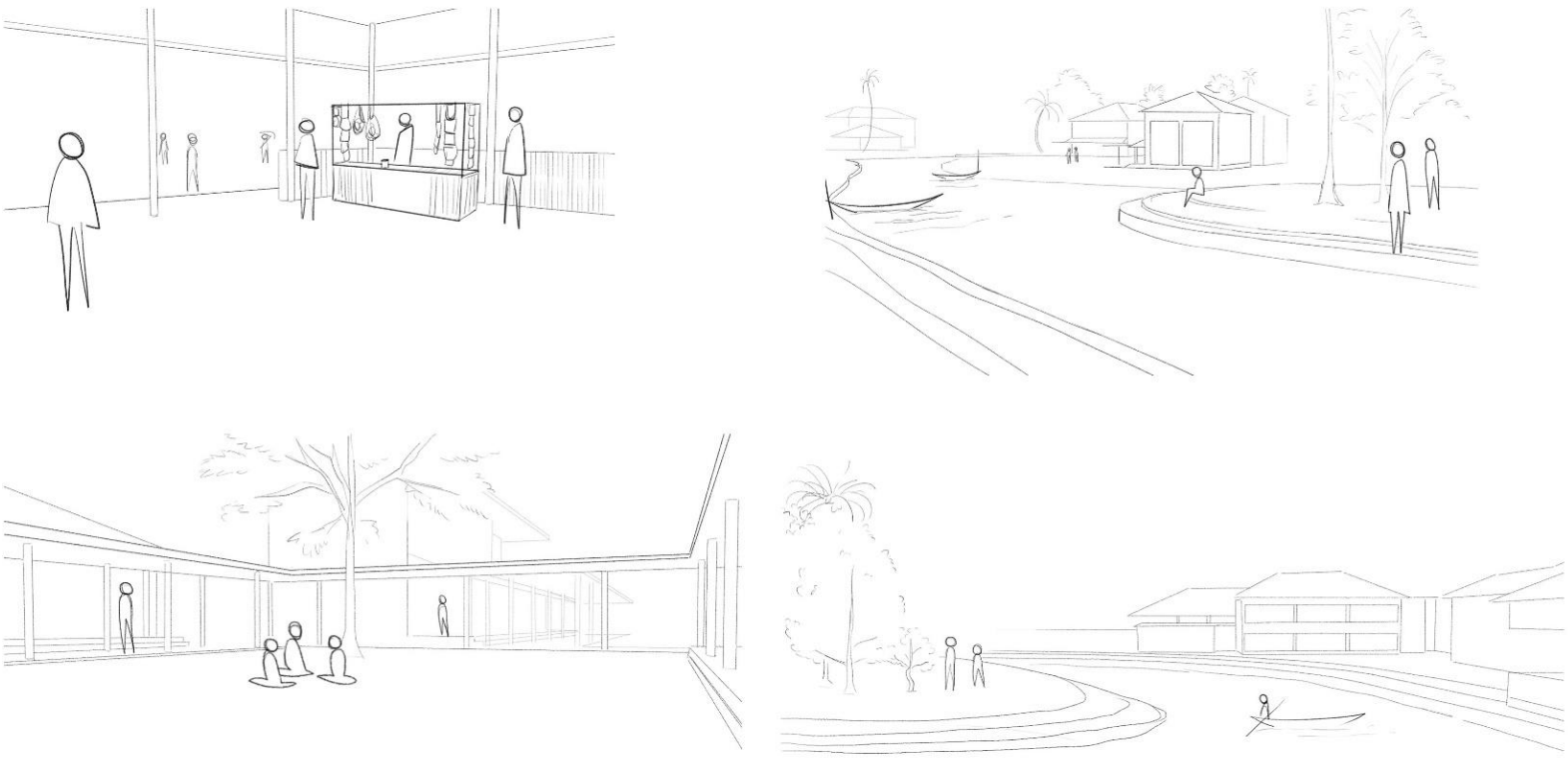
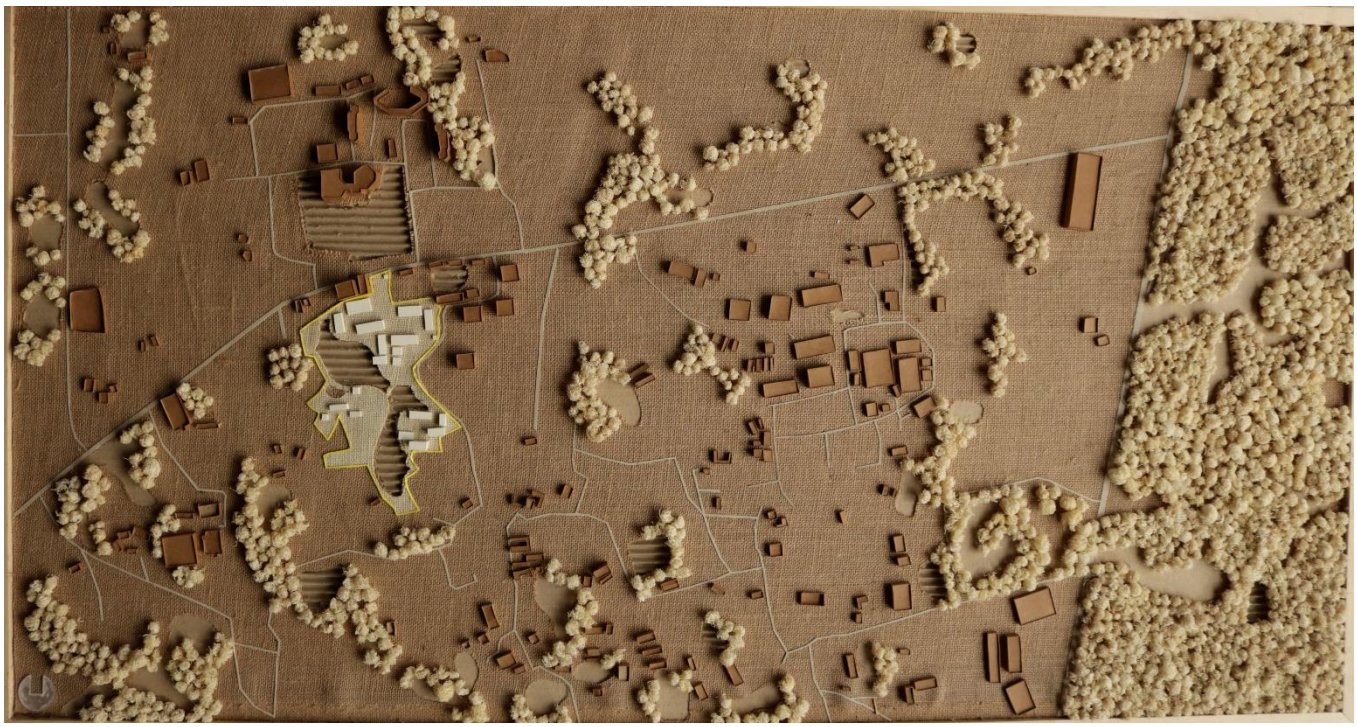
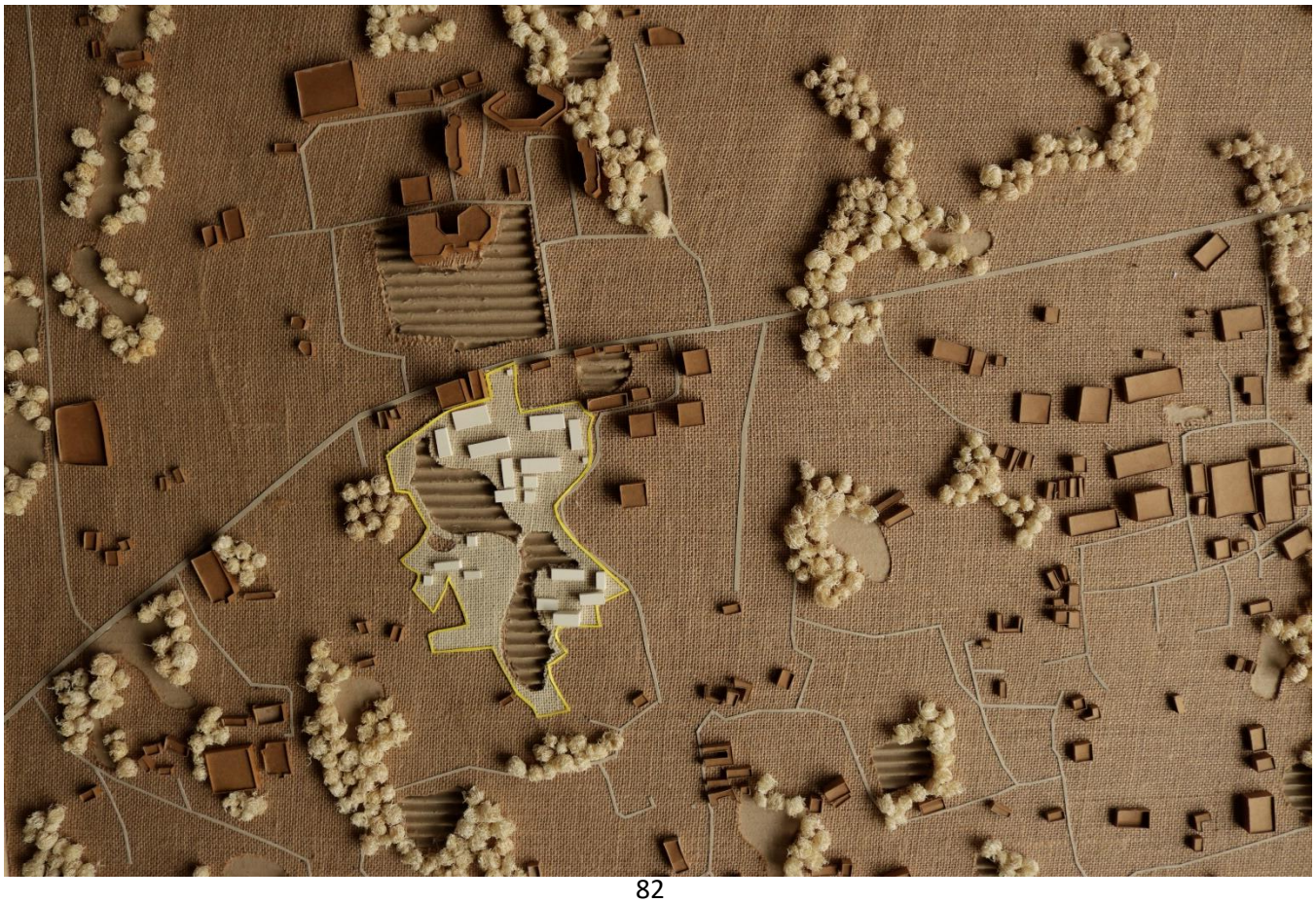
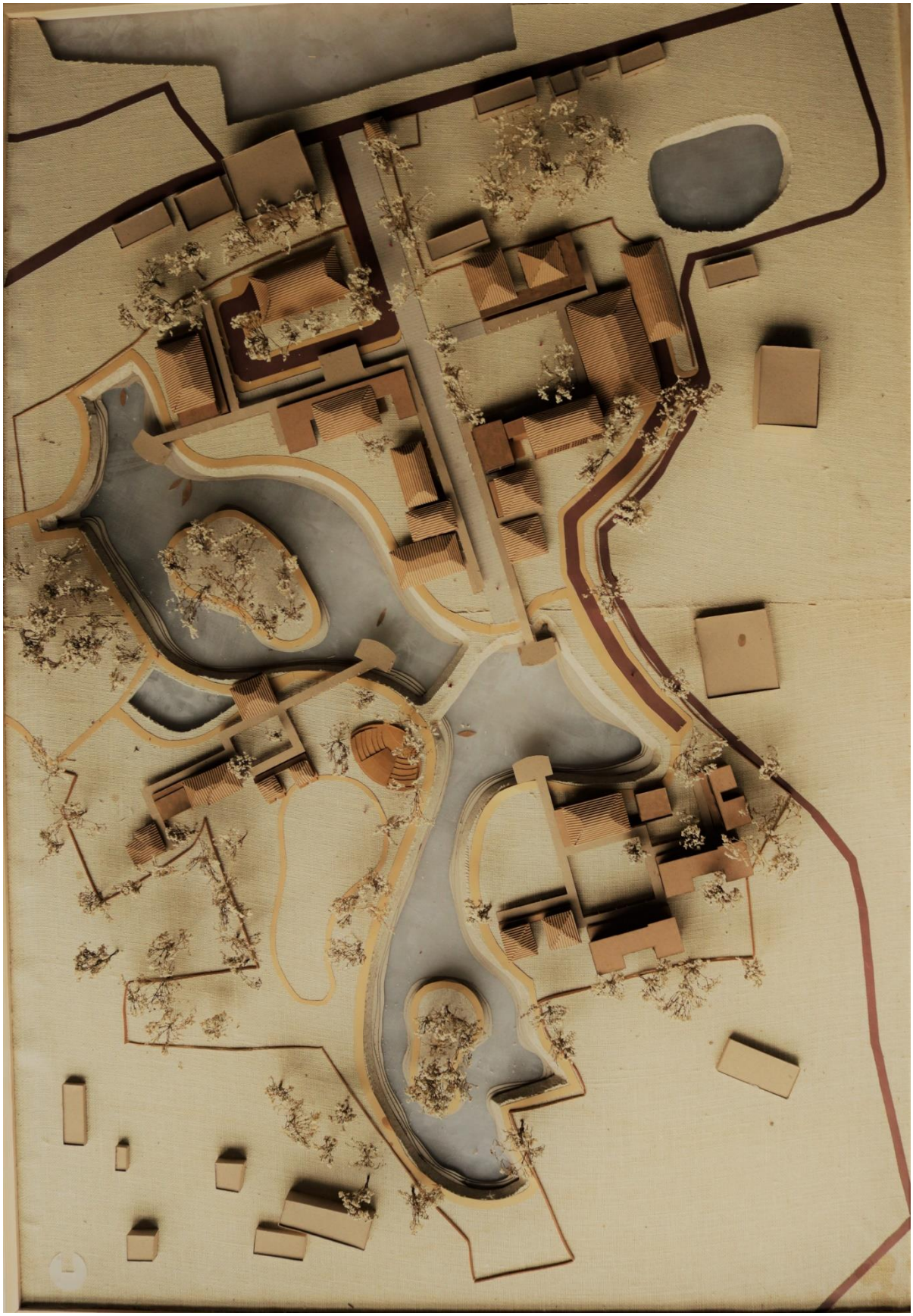


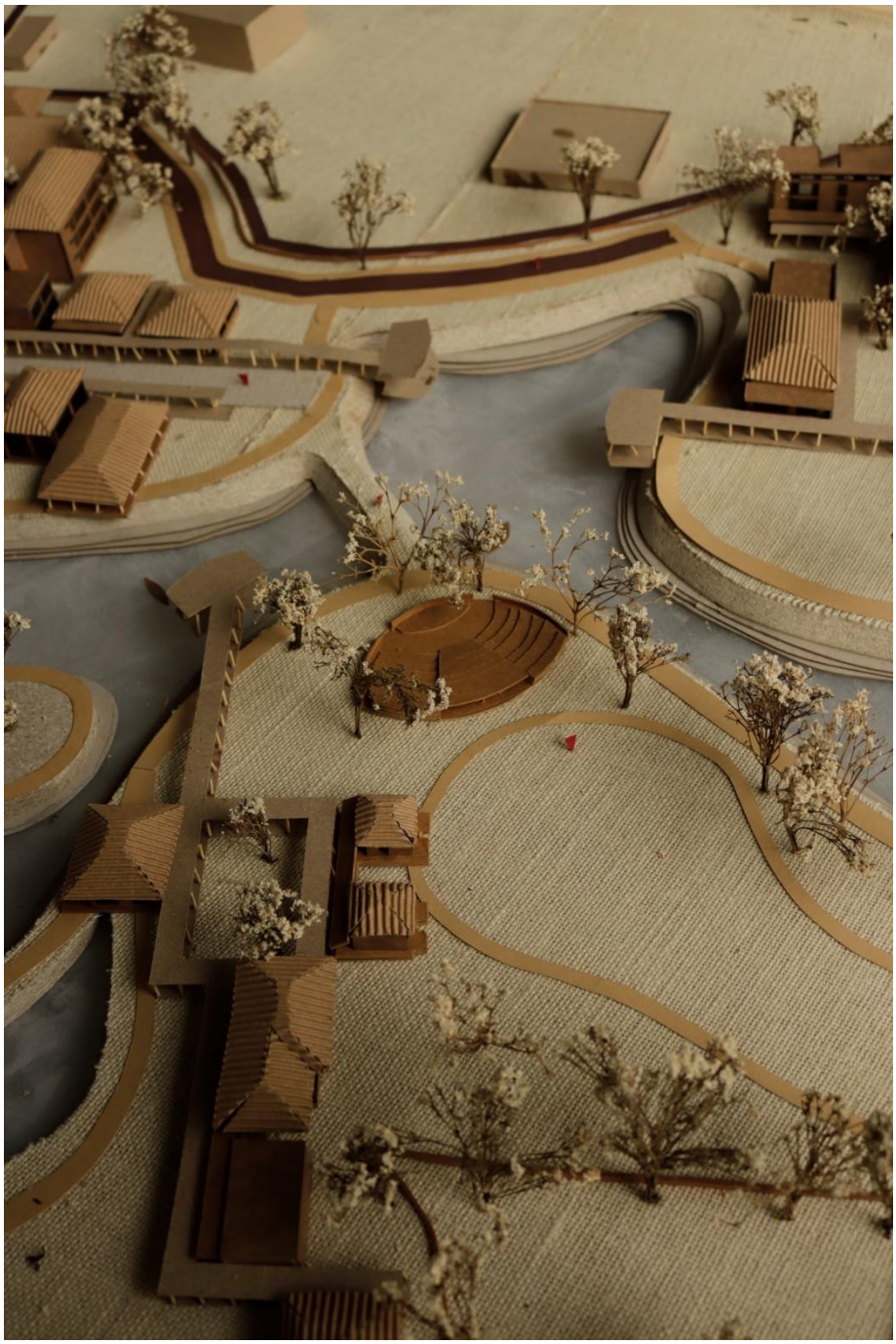
Figure 87: Conceptual Sketches of activities on proposed mass forms in the site

6.7 Site Model & Main Model Images









Conclusion

This paper on LGED Central Training Center focuses about how LGED works for the improvement of socioeconomic conditions of the country. LGED not only uses local labor but also makes use of the local material and help create job opportunities and maintain low cost. LGED has given its highest importance in training its employees to improve their capacity. They believe that only educational background will not help an employee in a work place, unless it is accompanied by a motivational supportive environment. LGED is planning on establishing a Training Unit to conduct training program for LGED officials. LGED planned a site in Rajendrapur junction. The project is for around 300 to 400 trainers and trainees all kinds of training and housing facilities. The programs to the project includes an administrative zone, Academic zone, Material testing lab, Library, Multipurpose hall/auditorium, Cafeteria, Guest house, Kitchen and dining hall, Indoor Games Facility and gym. The project aims to equip people with knowledge, know-how and skills required in engineering occupations or more broadly in the labor market' for the jobs of today and tomorrow. The goal of this project is to improve a nation's human capital, which in turn is related to greater economic prosperity. This research includes an intensive study of architectural standards to understand and solve the design in future with the proper use of ergonomics and standards. Located in an industrial area of 13.5-acre plot of land in Sardar Gazipur area, the site analysis concentrates on various aspects that affect the site and how the site affects its surroundings. With the help of thorough analysis of the site, different relationships related to the project was understood properly and this has further help with the design development later in report while doing the schematic plan. It can be concluded that, since the site has some existing structures to work with, instead of breaking the current structures, the design can be started by redesigning and relocating the functions within the structures. This will not only be cost effective but also give a guideline to the design.

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