

ARCHAEOLOGICAL SURVEY INSTITUTE

THESIS

Submitted in partial fulfillment of the requirements for the award of
Bachelor of Architecture degree

By

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DEPARTMENT OF ARCHITECTURE
SCHOOL OF BUILDING AND
ENVIRONMENT

SATHYABAMA
INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)
Accredited with Grade "A" by NAAC
JEPPIAAR NAGAR, RAJIV GANDHI SALAI,
CHENNAI - 600 119

MAY- 2021



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BONAFIDE CERTIFICATE

This is to certify that this Thesis Report is the bonafide work of
SHANU JOHNSON (3621070) who carried out the Thesis entitled “**Archaeological Survey Institute**” under our supervision from January 2021 to May 2021.

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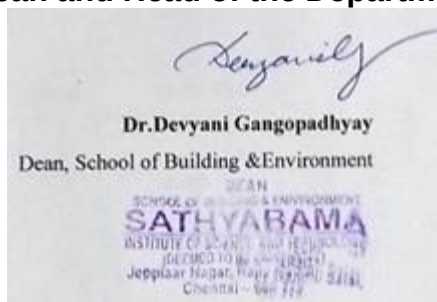
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DECLARATION

I, **Shanu Johnson** hereby declare that the Thesis Report entitled "**ARCHAEOLOGICAL SURVEY INSTITUTE**" done by me under the guidance of **Ar.Divyaa** (Internal Guide), **Ar. Monisha** (Internal Review member) and **Ar. Sarath Chandra Kanth** (External Guide), Sathyabama Institute of Science and Technology is submitted in partial fulfillment of the requirements for the award of Bachelor of Architecture Degree.

DATE:

PLACE: Chennai

SIGNATURE OF THE CANDIDATE

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TABLE OF CONTENT

CHAPTER NO.	TITLE	PAGE NO
	LIST OF TABLE	vii
	LIST OF FIGURES	viii
	LIST OF PLATES	x
1	INTRODUCTION	1
	1.1 INTRODUCTION	1
	1.2 AIM	1
	1.3 OBJECTIVE	1
	1.4 SCOPE OF THE PROJECT	2
	1.5 METHODOLOGY	2
2	LITERATURE STUDY	3
	2.1 ARCHAEOLOGY	3
	2.1.1 Orgin Of Archaeology	3
	2.1.2 Who An Archaeologist is?	3
	2.1.3 Courses In The Field Of Archaeology	4
	2.1.4 Divisions Of Archaeology	4
	2.1.5 Other Sub Discipline Of Archaeology	5
	2.1.6 How Do They Find An Archaeological site?	6
	2.1.7 Excavation And Process On Site	6
3	SPECIAL STUDY	8
	3.1 MUSEUM	8
	3.1.1 Planning Of Galleries	8
	3.1.2 Gallery design	9
	3.2 LIGHTINGS	11
	3.2.1 Natural Lighting	11
	3.2.2 Artificial Lighting	13
	3.3 LIBRARY STANDARDS	14

3.4	CAFETARIA STANDARS	15
3.5	SHADING DEVICE	16
3.5.1	Vertical Shading	16
3.5.2	Horizontal Shading	16
3.5.2	Egg Crate	17
4	LITERATURE CASESTUDY	18
4.1	KOREAN INSTITUTE FOR ARCHAEOLOGY & ENVIRONMENT	18
4.1.1	Circulation	19
4.2	CUNY ADVANCED SCIENCE RESEARCH CENTER	21
4.2.1	Flad Architects	22
4.3	KERALA UNIVERSITY,KARIAVATTOM CAMPUS	24
4.3.1	Laboratory Infrastructure	25
4.3.2	GIS Facilitated Computer Lab	25
4.3.3	Archaeozoology Lab	25
4.3.4	Ichthyoarchaeology Lab	26
4.3.5	Megalithic Documentation Lab	26
4.3.6	MUSEUM	26
4.3.7	Class Room	26
4.4	NATIONAL MUSEUM, NEW DELHI	27
4.4.1	Access To Site	27
4.4.2	Climate	27
4.4.3	About The Plan	28
4.4.4	Circulation	28
4.4.5	Education	29
4.4.6	Library	29
4.4.7	Auditorium	29
4.4.8	Display	29
4.4.9	Lighting	30
4.4.10	Other Feature	30
4.4.11	Fire	30

	4.5 TRIBAL MUSEUM, BHOPAL	31
	4.5.1 Site Location	31
	4.5.2 Access To Site	31
	4.5.3 Climate	31
	4.5.4 Aim and Concept	31
	4.5.5 Circulation	32
	4.5.6 Gallery-1 (cultural diversity)	32
	4.5.7 Gallery-2 (tribal life)	33
	4.5.8 Gallery-3 (tribal aesthetic)	33
	4.5.9 Gallery-4 (tribal spritual world)	33
	4.5.10 Gallery-5 & 6 (Exhibition & guest gallery)	33
	4.5.11 Lighting	34
5	ARCHITECTURAL DESIGN APPROACH	36
	5.1 SITE ANALYSIS	36
	5.2 FINAL REQUIRMENTS	38
6	CONCEPT	42
	6.1 CONCEPT	42
7	ARCHITECTURAL DRAWING	43
	7.1 SITE PLAN	43
	7.2 PLAN	44
	7.3 INSTITUTION VIEWS	55
	7.4 RESEARCH CENTER VIEWS	56
	7.5 MUSEUM VIEWS	57
	7.6 STAFF QUARTERS VIEWS	58
	7.7 MESS VIEW	59
	7.8 HOSTEL VIEW	59
	7.9 ARIEL VIEW	60
8	REFERENCE	62
	8.1 REFERENCE	62

LIST OF TABLES

Table No	TITLE	Page No
5.1	AREA STATEMENT	38

LIST OF FIGURE

Fig No	TITLE	Page No
3.1	Circulation in gallery space	8
3.2	Planning of galleries	9
3.3	Standard height and view point	9
3.4	Viewing distance should increase with size of the object	9
3.5	Angle and positioning of object	9
3.6	Possible gallery arrangements	10
3.7	Different ways of dividing exhibition space	10
3.8	Various types of overhead light	12
3.9	Overhead light – skylight	12
3.10	Natural lighting	12
3.11	Illumination of objects	13
3.12	Indirect lights	14
3.13	Artificial lighting	14
3.14	Library standards	15
3.15	Special arrangements in cafeteria	15
3.16	Vertical shading	16
3.17	Horizontal shading device	17
3.18	Egg crate	17
4.1	Site plan and site surrounding	18
4.2	Exterior view of the building	19
4.3	Views of the building	20
4.4	Korean Institute Plan	20
4.5	Elevations	20
4.6	Site plan and site surroundings	21
4.7	Master plan	22
4.8	Circulation of the site	23
4.9	Floor plans	23
4.10	Interior detailing	24
4.11	Site plan, Kerala University	25
4.12	Department plan	26
4.13	Location map	27

4.14	Rotunda as a form	28
4.15	All floor plan	28
4.16	Circulation	28
4.17	Service plan	30
4.18	Concept sketch of the museum	32
4.19	Basement plan	34
4.20	Ground floor plan	35

LIST OF PLATES

Plate No	TITLE	Page No
6.1	Site plan	43
6.2	Ground floor plan - Institute	44
6.3	First floor plan - Institute	45
6.4	Section and Elevation - Institution	46
6.5	Ground floor – Research center	47
6.6	Second floor – Research center	48
6.7	Museum floor plan	49
6.8	Ground floor - Hostel	50
6.9	First floor - Hostel	51
6.10	Ground floor – Staff Quarters	52
6.11	First floor – Staff Quarters	53
6.12	Mess floor plan	54

CHAPTER 1 - INTRODUCTION

1.1 INTRODUCTION:

It is said that history may be accurate but archaeology is precise, because it gives us strength of a place and it holds all the keys to understand who we are and where we come from. Archaeology is the study of prehistoric through excavation of sites and analysis of the artefacts and other physical remains. It is important to know the history of human existence and the unknown out of the darkness of times. Losing an archaeological site is about losing the life history and existence of people and their culture cannot be revealed. The historic past and the historic trace left by humans should be preserved. The archaeology needs to be treated as a valuable discipline to bring the past and misconstrued stories. There are three main divisions in archaeology; they are historical archaeology, prehistoric archaeology, and protohistoric archaeology.

1.2 AIM:

The aim is to create an archaeological survey institute and a research centre to study and preserve the ancient price possession, and it enlightens the young generation about the past human existence.

1.3 OBJECTIVE:

- To provide a campus with interactive spaces.
- To create a museum space within the site to make people know about the past and the culture followed.
- To provide a research centre to find and study about the ancient historic times.
- To provide an advanced research facilities with newly advanced lab machine.
- To provide accommodation for the students and research officers.
- To make environment lively and colourful by effective landscaping.

1.4 SCOPE OF THE PROJECT:

This project will focus on institute, museum and research centre. This is proposed for the students to study about the pre historic facts and the culture. Losing an archaeological site is about losing the pre historic culture and the evidence of human existence. The role of archaeology here becomes crucial. Archaeology can contribute immensely by revealing culture ways and artefacts that can help in identification of historical incorrect views and understandings. The presence of a few centres in India is the sad plight of archaeology today. This shows the demand for archaeological research centre is high. To propose an integration of various research facilities and advanced laboratories. Providing a museum, research institute and an institute together helps the students to interact and practice observation.

1.5 METHODOLOGY:

- Requirement, function and services of an Archaeological research centre is analysed from various case study.
- A complete analysis of the site with history, location, scope of the site and surround areas are documented.
- General conditions of a museum such as lighting, ventilation and circulation are obtained from case studies.
- Basic requirements and standards for the institute, museum and research centre are analysed.

CHAPTER 2 – LITERATURE STUDY

2.1 ARCHAEOLOGY

Archaeology is the study of prehistoric and recent human past through material remainders it is also sub discipline of anthropology which is the study of all other human culture.

“Archaeology is the study of human history and prehistory through the excavation of sites and the analysis of artefacts and other physical remains.....”

“Archaeology is a magical gateway to the past. It is the discipline that complements history best with its hard evidence and methodological advantages.....”

2.1.1 *Origin of Archaeology:*

The discipline of archaeology studies human cultures and past. Through recovery and interpretation of architecture, artefacts, bio facts, and landscape, archaeology seeks to determine the chronology of human development, unearth the culture history of various human settlement, understand the processes that underlie the changes taken place in human societies across culture.

2.1.2 *Who an Archaeologist is?*

Archaeologist is a professional who attempts to discover and analyse the evidence of past civilizations through the help of archaeological study. All we say that is a professional who attempts to discover and analyse the evidence of past civilization through the help of archaeology instant.

The eligibility to become an archaeologist is to complete any course which is related to archaeology or history subjects. Some of the eligible courses are diploma, masters, bachelor and doctoral courses available in this field but the basic requirement to pursue courses related to archaeologist is that the candidate must have passed 10 or +12 in any stream. For master courses, students must have bachelor's degree in the related field like archaeology, Indian history culture, anthropology etc. For post graduate diplomas students should have master degree in ancient or medieval Indian history or archaeology. No specific age requirements are there to become an archaeologist.

To become an archaeologist one must have eagerness and passion to know the developments in archaeology and should have been organized approach with effective attention to inductive besides this one must have extra communication skills and the ability to work with other professionals along with it strong team work skill, self-motivation, focus, good IT skills, patience and dedication are the most important traits required to become an archaeologist.

2.1.3 Courses in the field of archaeology:

- Diploma in Indian Archaeology
- Bachelor of Arts in Indian History culture and Archaeology
- Bachelor of Arts in Archaeology and Museology
- MA in Archaeology
- MA in Ancient Indian History and Archaeology.
- Post-Graduate Diploma Archaeology.
- Doctor of Philosophy in Ancient Indian History, Culture and Archaeology.

2.1.4 Divisions of Archaeology:

There are three main divisions in archaeology; they are historical archaeology, prehistoric archaeology, protohistoric archaeology.

Historical archaeology examines the written records that are left behind by the civilizations.

Prehistoric archaeology its about the study of the past before the records began. Protohistoric archaeology is adopted to cover the study of societies with limited written records.

The archaeology and its cultural sequences has been taken park in different period of time, prehistoric period can be divided as low Palaeolithic age where the used cured core as tools, where the middle Palaeolithic age used flake tools, and the upper Palaeolithic age used blades and burins as tools. During Mesolithic period they used microlith as tools.

Neolithic period the settlement of human existence started and they are known to use fire for the first time. They are also well known for making wheels and pottery. Agriculture and dwelling habits has been followed. They use polished and grained stones as tool.

Proto history, the pre Harappan culture and the Harappan culture are followed during Indus civilization.

During chalcolithic age people has started using copper. In India the chalcolithic site was found in north part, this age was absent in southern part of India like Tamilnadu.

In iron age the importance of iron and burial practice among the people has been developed.

2.1.5 Other sub discipline of archaeology:

Aerial archaeology - the study of site from Aerial photographs, especially by identifying the crop marks.

Anthracology - the study of charcoal remains.

Archaeoastronomy – the study of relationship between the configuration of ancient monuments and astronomy.

Archaeozoology – the study of animal remain.

Archaeobotany or paleoethnobotany – the study of human plant interaction in the archaeological records.

Archaeological science or archaeometry – the application of specific techniques or methodologies of archaeology such as radio carbonating, statistics and remote sensing.

Battlefield archaeology – the study of conflicts site from an archaeological perspective.

Calceology – the study of archaeological footwear.

Computational archaeology – the application of computers, particularly GIS, to archaeology.

Experimental archaeology – it involves attempting to re-enact past processes to test theories about ancient manufacturing, engineering and the effects of time on sites and objects

Environmental archaeology – it studies the long term relationship between humans and their environment.

Forensic archaeology – the application of archaeological techniques to criminal investigations. It has become particularly prominent in the investigation of mass killings associated with war crimes.

Landscape archaeology – it involves identifying and studying sites as components in a wider geographical area.

Maritime archaeology – the study of submerged archaeological sites, including shipwrecks as well as settlements that have been engulfed by bodies of water.

Museum studies – the display and interpretation of past remains for the public.

Osteology – the scientific study of bones.

Paleopathology – the study of ancient disease among animals and humans.

Receology – the study of warfare and the means of warfare from an archaeological perspective.

2.1.6 How do they find an archaeological site?

To find an archaeological site they use old maps and other historical traces that are left behind. They start their excavation from the banks of rivers, because the settlement started along the river as water acted as a basic need for human life. New research techniques like geographical information systems help them create environmental models that can predict where the archaeological sites are located. GPR uses radio waves to locate anomalies in the soil. The metal detector emits an electromagnetic wave that gets reflected off from metal artefacts.

2.1.7 Excavation and process on site:

The archaeologist finds a site and excavates the units found and to recover the artefacts that are left behind by the humans during ancient times. The north-south and east-west coordinates of each unit are plotted as a grid form on the site. The excavation units are usually 1x1 m, 2x2 m which are square in grid and 1x2 m as

rectangle grid. The archaeologist use shovels, dentals picks, whisk broom, spoons to carefully remove the units from the soil.

During excavation even a small artefacts found are collected in a plastic bag which are free from acid contend. They label each bags with site name, number, excavation unit, level number, feature number, date and name of the excavator.

All the artefacts that are collected per day is taken to the lab with all protection needed to safe guard the artefacts. During examination on lab they are carefully washed with chemicals, identified, categorized and analysed. At first they separate the artefacts based on the category like bones, stones, fossils, fabrics, wood etc... then they are send to their specific lab for further examination. Later on each artefacts of each group are separated again based on their colour, type, shape, size, function and impressions on it. The total information about the artefacts are saved on the computer. They use different varieties of tools like GIS, GPS, remote sensitivity, geographical survey, Ariel photograph etc... In ASI (archaeological survey of India) the head department of archaeology where all the archaeological datas that are documented should be detailed and get approved. An approval from ASI allows an archaeologist to do further examinations.

CHAPTER 3 – SPECIAL STUDY

3.1 MUSEUM:

3.1.1 Planning of galleries:

The planning of galleries is mainly depends on types of collection and lighting needed for the same. The size of the rooms and the height of the ceiling will be determined by the nature of the objects. A relief area should be provided within galleries so that the visitors does not loose intrest. Either the colour tone can be changed within two galleries so that they look attractive and intresting.

The circulation space identifies area of a building that is used for pedestrian travel, such as a hallway, stair way, and area in a room lead to another room. It is generally not good to have a home with a high percentage of circulation space. Developed exhibitions with these visitors circulation patterns in mind, so that the visitors doesn't have to take extra steps. Minimize the number of steps by not requiring backtracking. Do not design a space with multiple exits that makes the visitors to make choices where they will exits the exhibition without giving attention at all of the exhibit elements.

Designing circulation space should be widen corridors beyond the typical 2.5 to 3m currently in use. Corridors should be able to easily handle two way traffic. Breakup corridor lengths, This will reduce travel and also discourage kids from running through the hall ways. Keep corridors a consistent width. Consider rounding or angling corners so there is a sight line to the intersecting corridor. Blind corners can be a hazard. People who walk at a fast space or turn corners quickly does not see the traffic in the intersecting hallway.

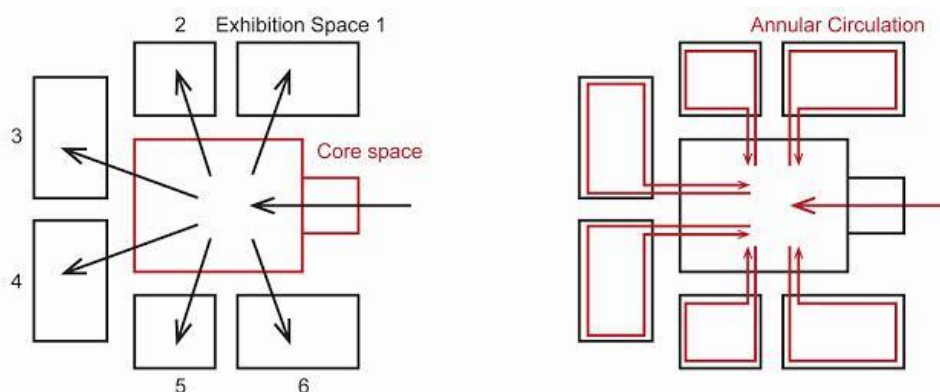


Fig 3.1 Circulation in gallery space

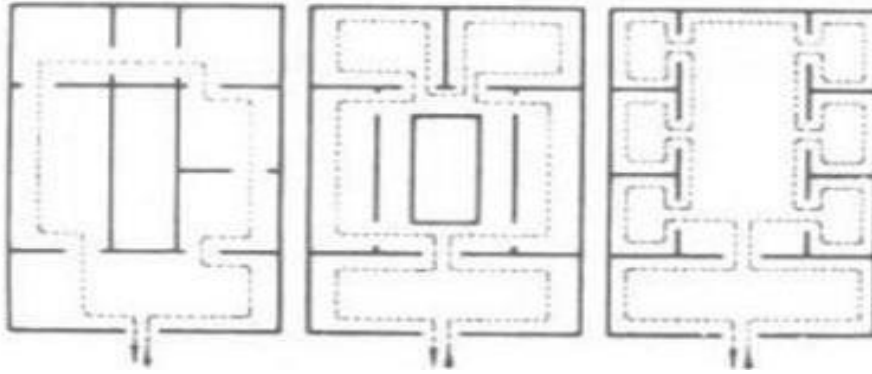


Fig 3.2 Planning of galleries

3.1.2 Gallery design:

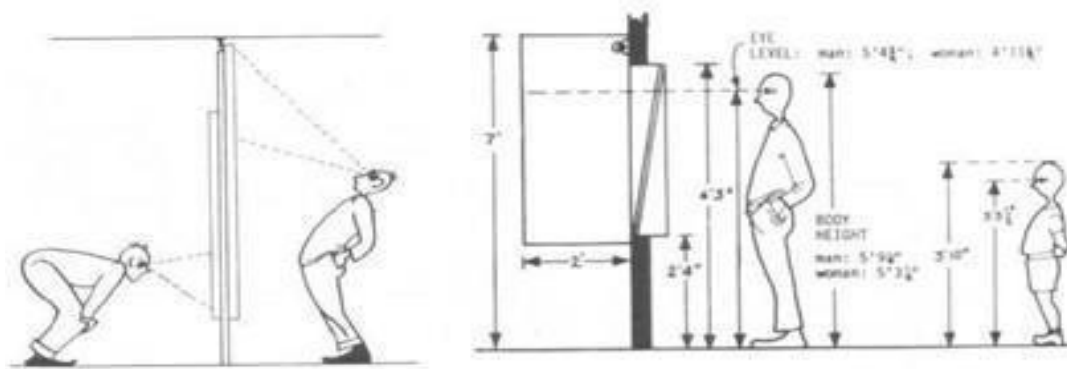


Fig 3.3 Standard height and view point

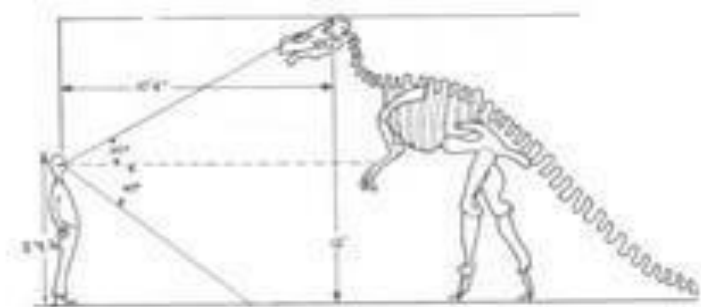


Fig 3.4 Viewing distance should increase with size of the object

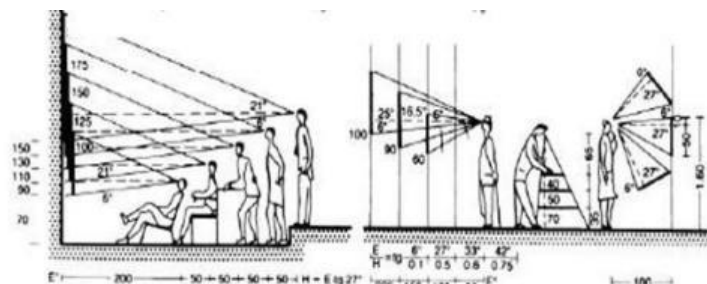


Fig 3.5 Angle and positioning of object

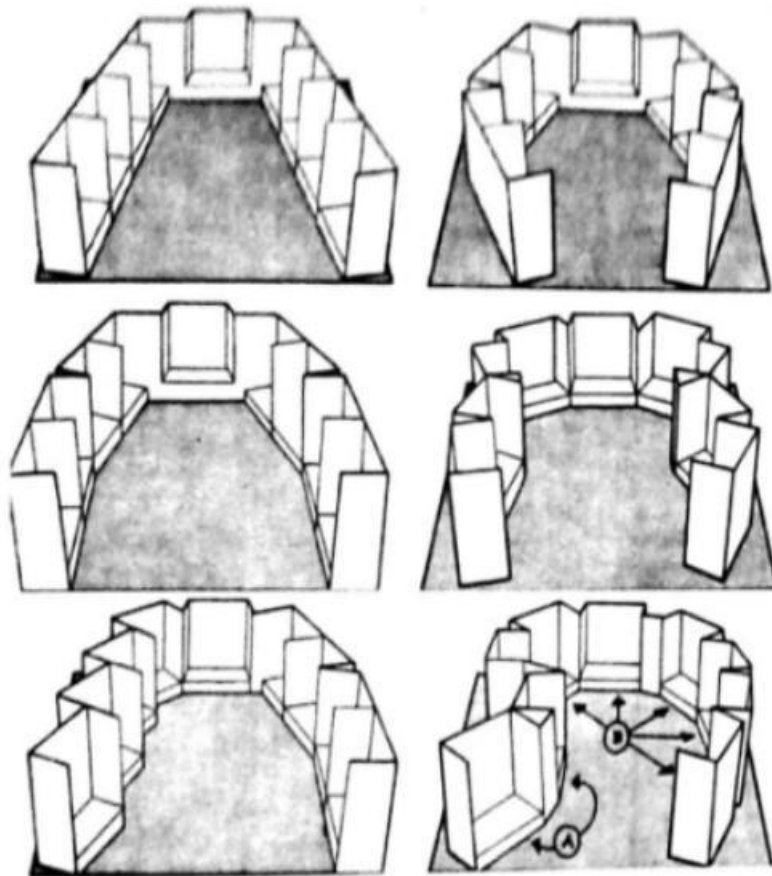


Fig 3.6 Possible gallery arrangements

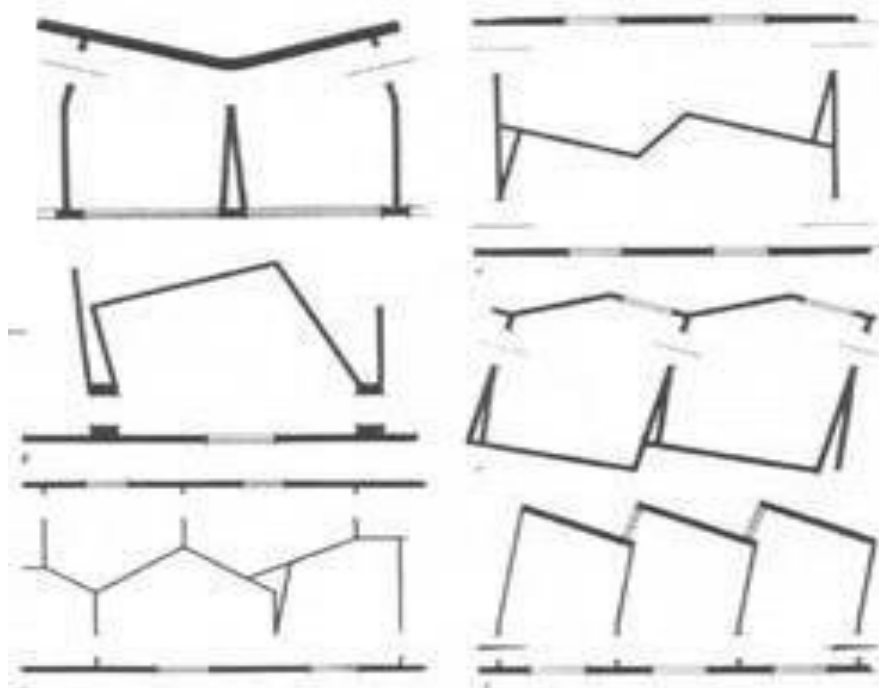


Fig 3.7 Different ways of dividing exhibition space

3.2 LIGHTINGS:

Lighting is one of the most important aspects in a museum space. A clear arrangement of both artificial and natural lighting in the museum allows the visitors to have a good visibility. The lighting arrangements in a museum has a great impact on the mind of visitors as such great care should be taken during selecting the type of light either naturally or artificially. Using a natural light needed much control to prevent glare and reflection. The artificial light are set to focus on an object where the object withstands by itself when an artificial light falls on the object.

3.2.1 Natural lighting:

Daylight is rarely satisfactory for exhibits as it is too far temperature in cold countries and far too brilliant in tropical countries. Daylight has daily and seasonal changes with unpredictable patterns depending on cloud cover, atmospheric pollution and other climatic variation. Daylight can also be successful in illuminating large areas to stimulate natural external conditions. However some exhibits need natural daylight like plants, large engineering exhibits and most sculptures. Natural lighting is provided by the windows. Overhead light is mostly used in museums.

Overhead lighting provides a steady source of light which least liable to be affected by lateral obstacles. Wall spaces are as a result left free for display and exhibits. However maintenance is a problem while using a overhead lighting. This type is also difficult in inculcate in multi-storey.

Lateral lighting provides either by windows of various shapes and size placed at suitable intervals in the walls or by continuous openings. They provide a convenient and economical methods of regulating ventilation and temperature. This acts as an excellent relief by providing pleasant views of the outside natural environment. It also cause glare and reflection which impedes the visibility and decrease flexibility of interior layout.

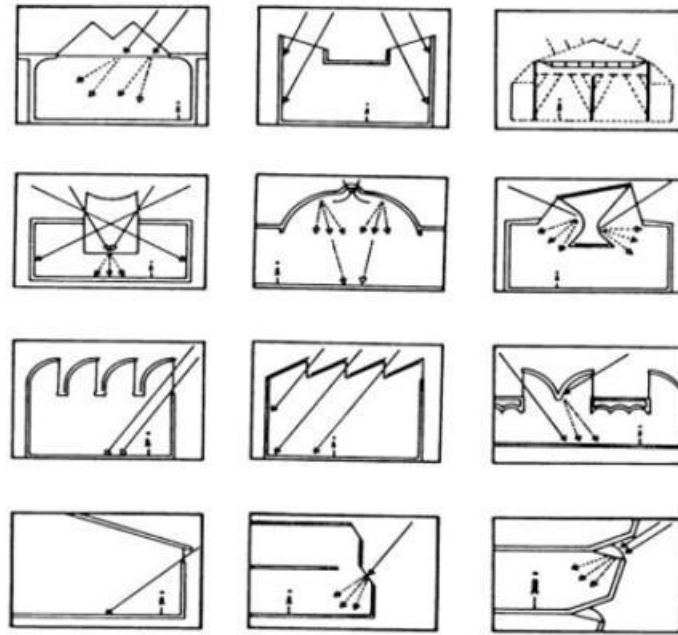


Fig 3.8 various types of overhead light

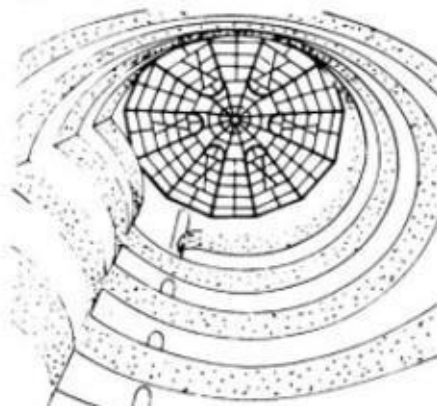


Fig 3.9 overhead light – skylight

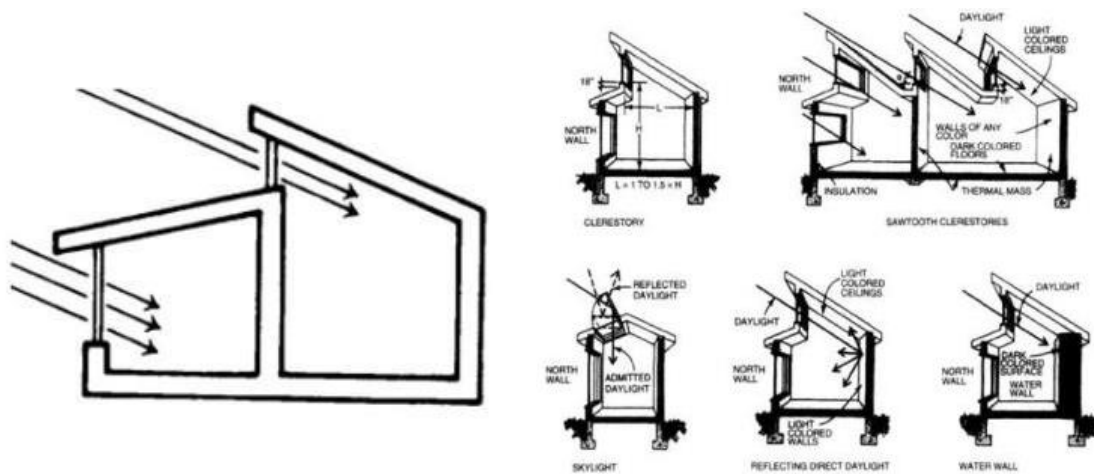


Fig 3.10 natural lighting

3.2.2 Artificial lighting:

Ideal exhibition conditions are attained where every aspect of the display is controllable and the light can be focused, moved, coloured and all remains independent of weather. Hence these aspects can be controlled to control interest, mood attention and even pleasure. It is described for an exhibition to have both light and dark area so that objects stand out. One should be able to achieve variation in illumination with moderate levels in brightness to connect spaces dramatic and thermal effects can be sought out by artificial light.

Direct light fixtures are recessed in ceiling or wall. They are surface mounted to ceiling or wall. The direct light fixtures are suspended from ceiling.

Indirect lighting fixtures are cove or valance lighting. Up light suspended from ceiling.

For display lighting, incandescent lamps often known as GLS lamp and halogen lamp are used.

There are two types of artificial light sources, they are fluorescent lamp and incandescent lamp. The fluorescent lamp are non-directional and cannot be focused or used to project a parallel beam. It reduce glare and used as general lighting. Incandescent lamps are directional and used to highlight on certain spot. They are more flexible in use and expensive. This also can be used in conjunctions with reflectors.

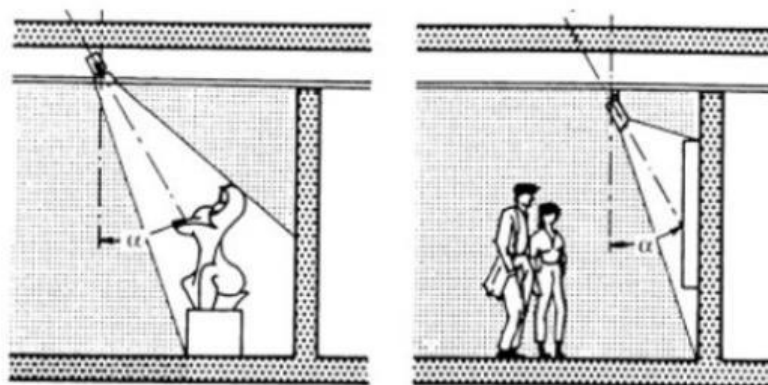


Fig 3.11 illumination of objects

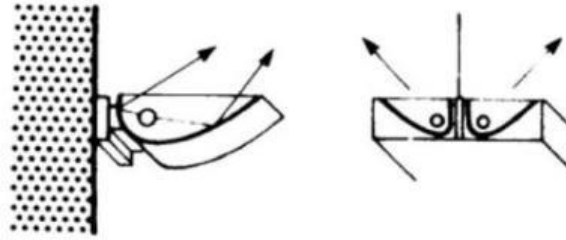


Fig 3.12 Indirect lights

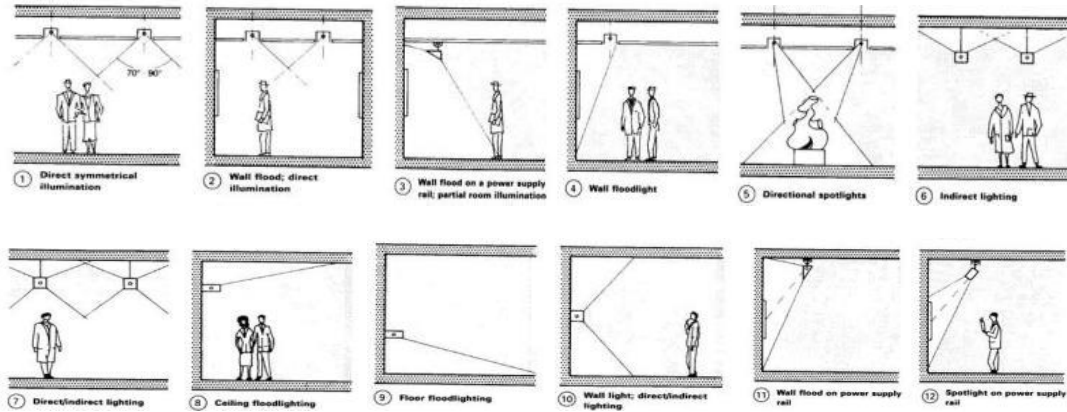
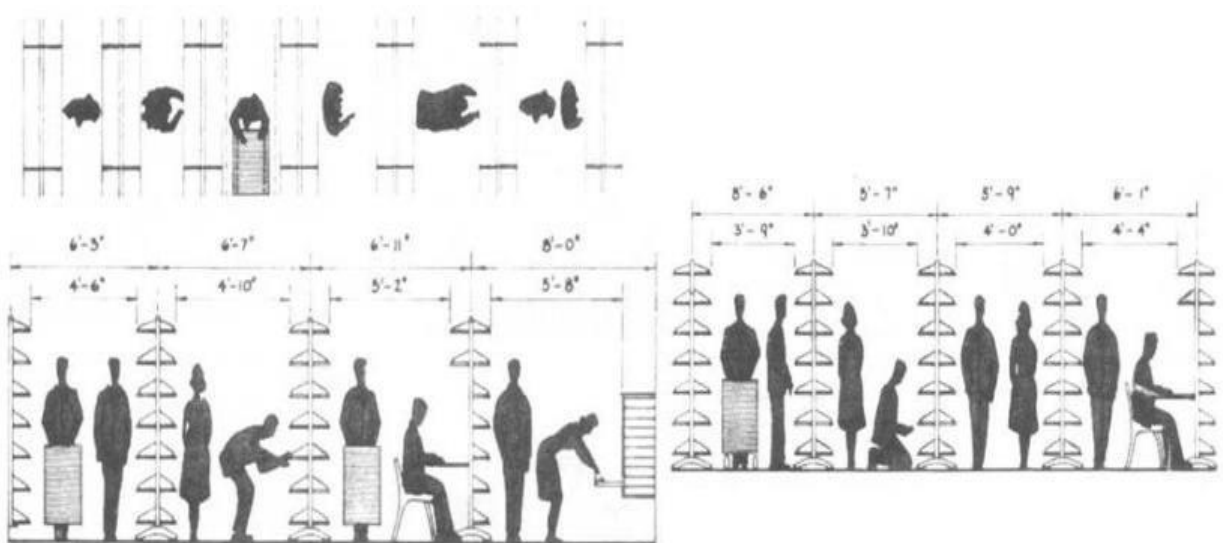


Fig 3.13 Artificial lighting

3.3 LIBRARY STANDARDS:



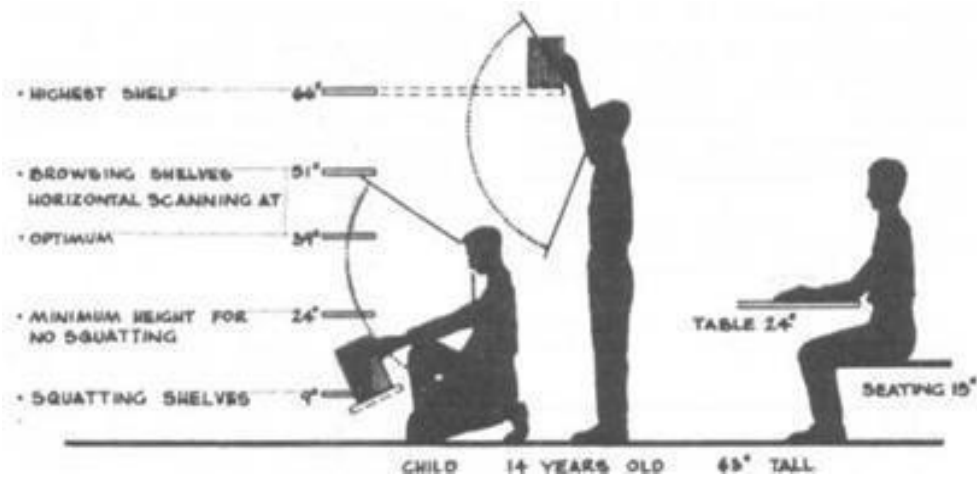


Fig 3.14 Library standards

3.4 CAFETERIA STANDARDS:

In a cafeteria a circulation of a space and the sitting arrangements are the most important part where there are lots of standards to be followed in these area. The space between each should be a minimum of one meter space that will allow a person to move out freely without disturbing other tables.

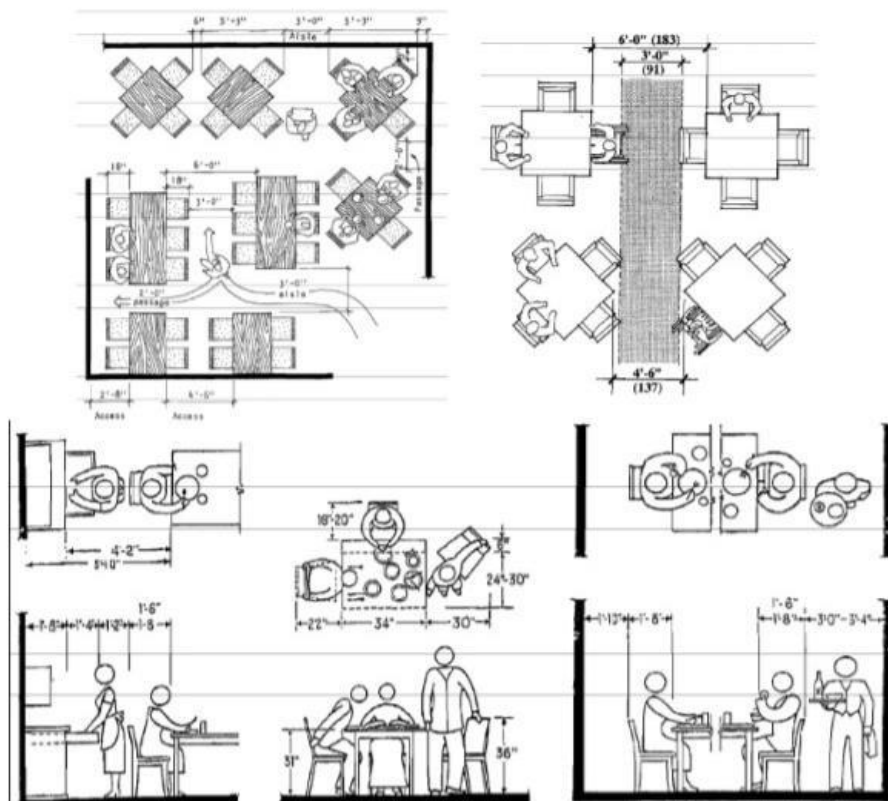


Fig 3.15 Special arrangements in cafeteria

3.5 SHADING DEVICE:

Direct sun can generate an equivalent heat as one bar radiator over each square meter of a surface, but effective shading can barricade to 90% of this heat. By shading a building and its outdoor spaces it will reduce summer temperatures which improve comfort and save energy for later use. Sun Shading Devices improve internal environment so as to supply greater comfort for occupants. Likewise, internal sun shading devices like curtains help to beautify interior space and make a way of privacy. A variety of shading techniques can help, from fixed or adjustable shades to trees and vegetation, depending on the building's orientation as well as climate and latitude. Variable for the formal formation in adaptive components are transformation, position, extent, plane, cover, shape. At first the transformation is based on size then positioning of building. Placing it to the external and internal position of the building. Then it developed to fully and partially cover for the building.

3.5.1 Vertical shading device:

The vertical shadings are primarily useful for east and west exposures of the sun, which improve the insulation value of glass in winter months by acting as a windbreak. They can be either fixed or adjustable.

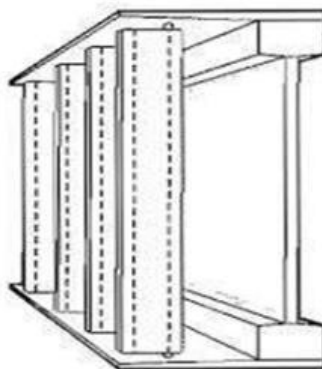


Fig 3.16 Vertical shading

3.5.2 Horizontal shading:

The horizontal shadings are to shade an opening during hot summer months i.e. from march to June, but to allow solar radiation through openings during winter months like October to December helps to warm a building. Horizontal shading doesn't works on East and West side of the building.

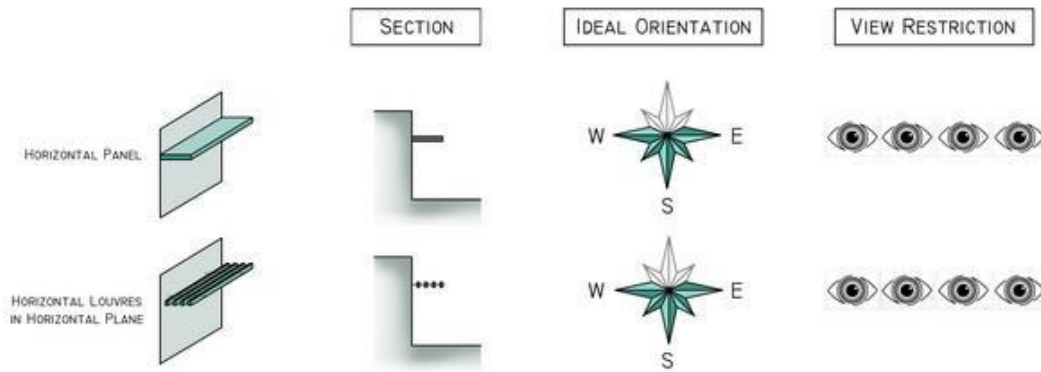


Fig 3.17 Horizontal shading device

3.5.3 Egg crate:

It is the combination of both vertical and horizontal shading elements, that are commonly used in hot climate regions because of their high shading efficiencies. The horizontal elements control ground glare from reflected solar rays. This device works well on walls.

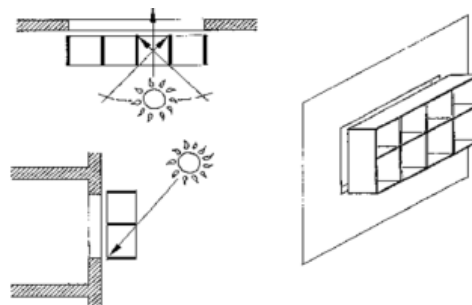


Fig 3.18 Egg crate

CHAPTER 4 – LITERATURE CASESTUDY

4.1 KOREAN INSTITUTE FOR ARCHAEOLOGY & ENVIRONMENT

Architects : Hohyun Park + Hyunjoo Kim
Floor Area : 2497 m²
Year : 2010
Location : Chungcheongnam-do, South Korea
Building area : 847.99 sq.m
Site area : 4298 sq.m

Korean Institute for Archaeology & Environment was founded as an artefacts research centre as part of Korea University's Archaeology Department in 1995. In 2006, research centre changed its name to current name. Major activities are excavation, research, publication, exhibition, and seminars. Since its foundation in 1995, the research institute has grown and existing facilities are not enough to provide good research environment. So, new research centre was planned in early 2009.

Requirement from the client was total floor area should not exceed 2,300 sqm and Building scope was 3~4 floors. They divided programs into two groups according their function and planned service areas between two groups. Since budget and construction time were limited, they decided to design relatively a simple form.

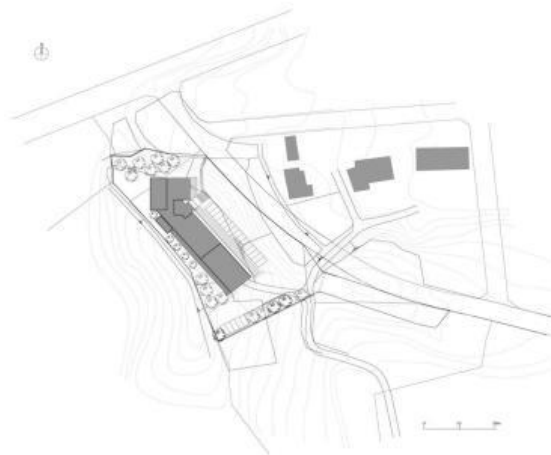


Figure 4.1 Site plan and site surrounding

The site is located nearby the Sejong campus. Most of surrounding area is farmland and the site is next to proposed road, which will be constructed in few years. Current access to the site is limited from a small unpaved road on south east side. The building is planned to be situated parallel to the proposed road. Since north east side of the site is 3 meter lower than south west of the site, placing of the building is planned at south west of the site in order to reduce earth works.

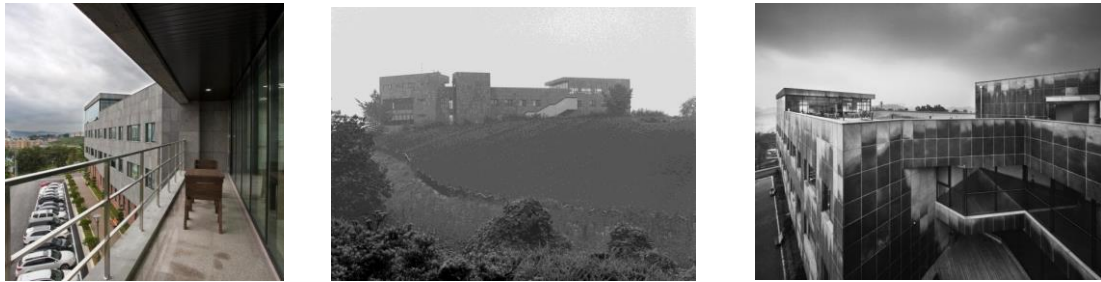


Figure 4.2 Exterior view of the building

The building consists of two asymmetrical wings and a central core. Most of research activities are programmed at the long wing (called research wing), where research offices and storage for artifacts are located. The short wing (called seminar wing) is space for seminars, library, and meetings. The research wing is divided into a brick finished storage on 1st floor and a lava stone finished research offices on 2nd & 3rd Floor by shifting of upper mass about 2 meters. An exposed translucent polycarbonate finished staircase and terrace space at 2nd floor are situated in this gap. Cafeteria on 4th floor is accessed through the rooftop garden. Since there are no big buildings around, cafeteria has a great view through full glass windows.

4.1.1 Circulation:

Circulation of the building is divided into two. One is for moving artifacts and the other is for researchers. Due to its function, artifacts loading space was planned at the south end on 1st floor. All the process of cleaning, photographing, and storing is started from this loading space. Two staircases were required by local law and U-shaped staircase is planned as a major vertical circulation and a straight run staircase, which connect lobby to research office on 2nd and 3rd floor, is designed for more efficient moving.



Figure 4.3 Views of the building

What they focused on during design was to make many rest space. By placing big and small terraces at many places, research space becomes more efficient and by adding an exposed translucent staircase on simple and linear form, they tried to create fun and efficient space.

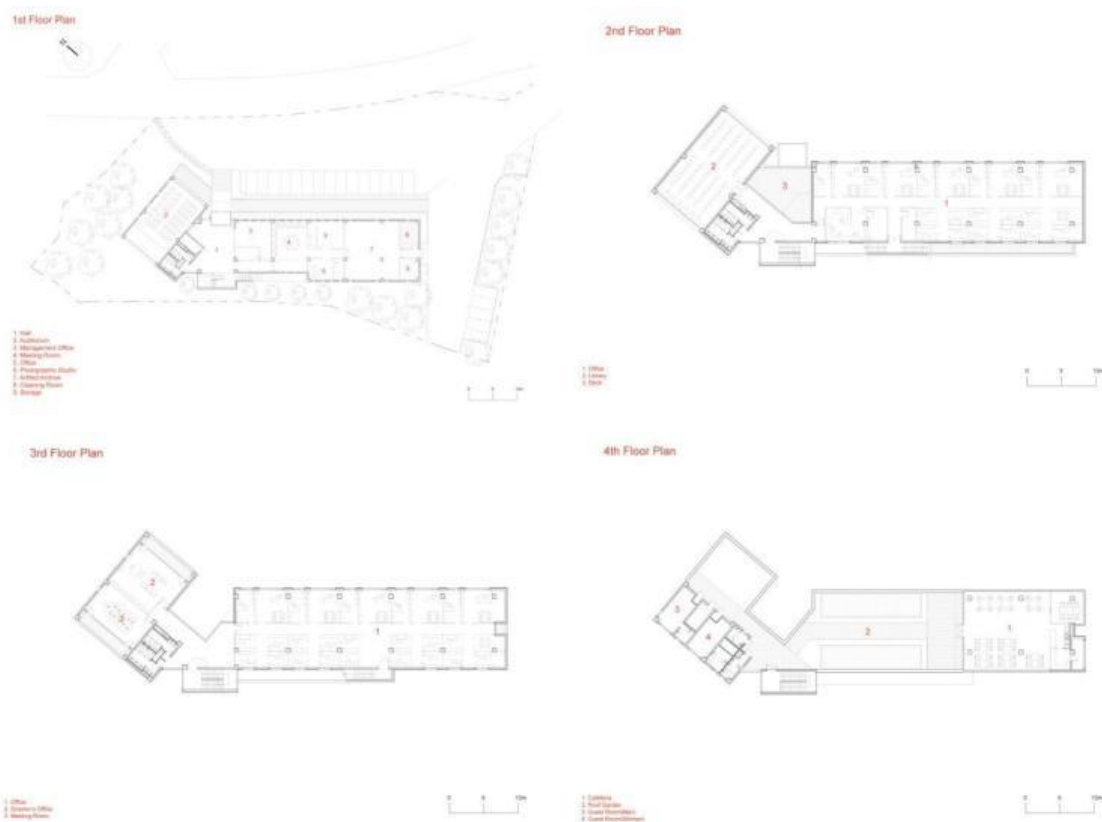


Figure 4.4 Korean Institute Plan

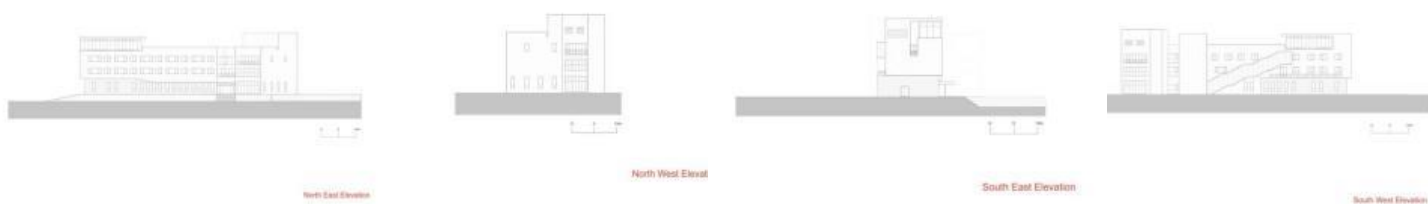


Figure 4.5 Elevations

4.2 CUNY ADVANCED SCIENCE RESEARCH CENTER:

Architects : Flad Architects, KPF
Location : New York, USA
Principal-in-Charge : Rob Graves AIA
Project Manager : David Halpern AIA
Laboratory Planner : Richard Pass AIA
Interior Designer : Jamie Carley
Year : 2014
Type : Educational

The 200,000 square-foot facility in upper Manhattan is designed to promote collaboration among scientists in five areas of global research: nanoscience, photonics, structural biology, neuroscience, and environmental sciences.

The Advanced Science and Research Center and the City College Center for Discovery and Innovation offer a positive presence for the Harlem community and serve as a magnet for nationally and internationally recognized researchers. The influx of talent drawn to the new facility will allow CUNY to maintain its status as a premiere public university, and one which has historically sought to give back to city with over three quarters of its students remaining after graduation.



Figure 4.6 Site plan and site surroundings

4.2.1 Flad Architects:

The complex is designed to accommodate a wide range of research initiatives in many varied disciplines, through the use of a modular utility “infrastructure” that can support varied research requirements. Below grade, the buildings share services including a vivarium, a receiving area, building support activities, and core facilities such as Imaging Modalities, behavioural studies, and cryo-physics. The ASRC building, housing science facilities, is arranged thematically on a floor- by- floor basis focusing on five areas of research: Photonics; Structural Biology; Biosensing/Remote Sensing; Nanotechnology; and Neuroscience. It acts as a CUNY-wide facility providing hoteling for outside research activities. In contrast, the City College Center for Discovery and Innovation houses multiple disciplines on each floor, allowing for work on joint topics and projects. Both buildings promote active collaboration for researchers, faculty, and students.



Figure 4.7 Master plan

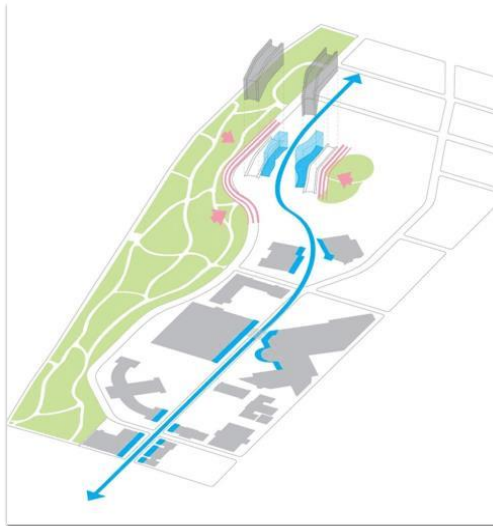


Figure 4.8 Circulation of the site

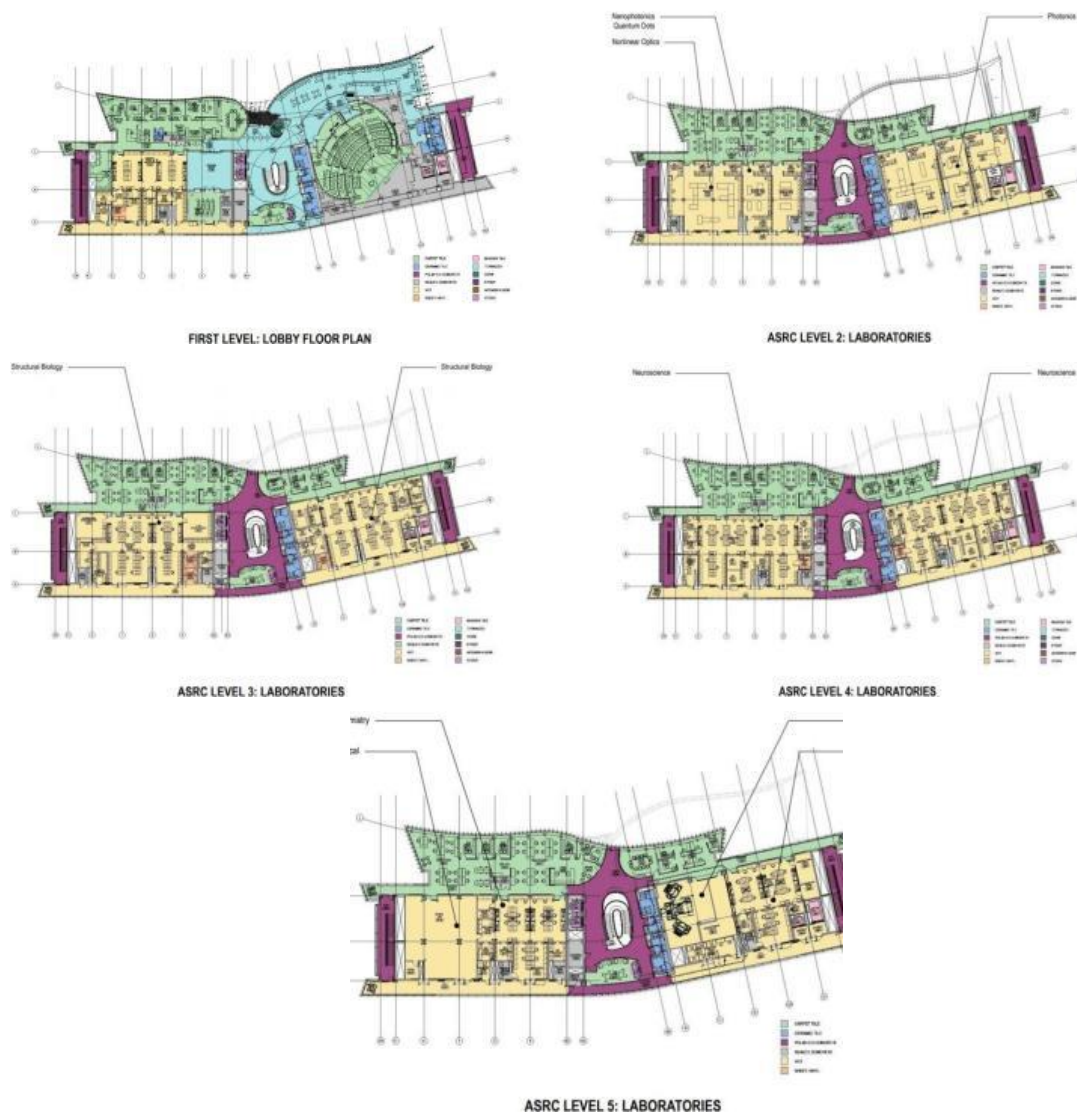


Figure 4.9 Floor plans

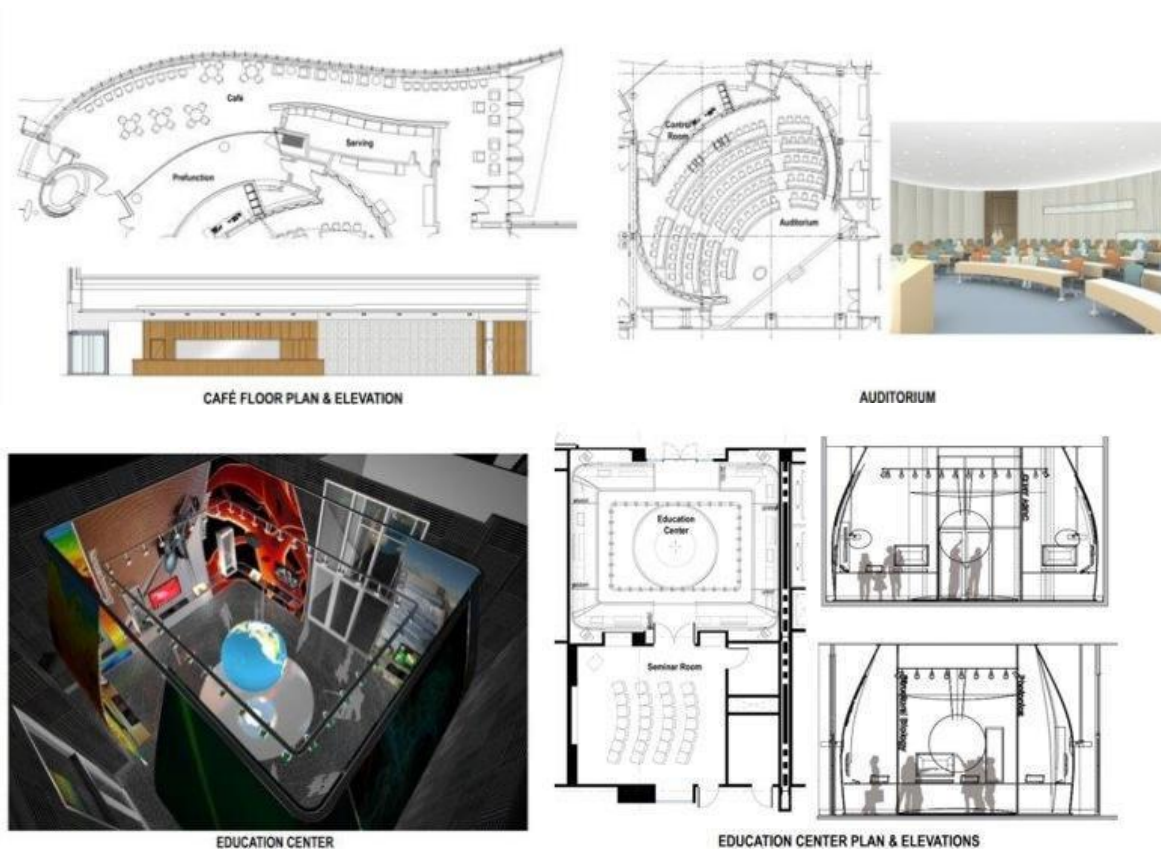


Figure 4.10 Interior detailing

4.3 KERALA UNIVERSITY, KARIAVATTOM CAMPUS, TRIVANDRUM

This research centre is situated in Kerala University located in kariavattom campus Established in 1997. This is the only university which offers masters Degree, M.phil, P.hd in archaeology. The department has a rich collection of over 940 books on archaeology and allied disciplines. They include Indian and foreign publications Reprints of important reference journals and series like Archaeological Survey of India reports, Cunningham reports, Epigraphia Indica, South Indian Inscriptions ,ancient India and Indian Archaeology - a review are available in the library.



Figure 4.11 Site plan, Kerala University

4.3.1 Laboratory infrastructure:

GIS facilitated computer lab Archaeozoology lab Ichthyoarchaeology lab
Megalithic documentation lab.

4.3.2 GIS facilitated computer lab

GIS lab is equipped with,

- 10 computers
- Total station instrument (LEICIA)
- GPS units
- u-max A3 negative scanner
- Air conditioned

4.3.3 Archaeozoology lab:

The lab possesses modern Osteological reference collection of animals. It has all facilities for the identification and analysis of faunal materials from archaeological contexts with the aid of comparative anatomy of animal bones. Analysis and Report preparation for these bones were done here.

4.3.4 Ichthyoarchaeology lab:

This section offers a comprehensive collection of fish Osteological reference collections (300+ specimens). This is the only lab in India with reference collection of fish bones. There were three Indian archaeological related labs in India (Pune, Baroda, Allahabad) but these three labs were inactive.

4.3.5 Megalithic documentation lab:

Making of drawings of excavated artefacts. Mending works for artefacts takes place here. Systematic drawings will be prepared here. System with printer and wash basin facilities were here.

4.3.6 Museum (display area):

The department has a full fledged archaeological museum based on field collections from various parts of Kerala as well as other parts of India. Artefacts found by students excavated during camp time were displayed here. School students were also allowed for the exhibition visit.

Exhibits displayed by ages (Major displays from Gujarat and Kerala). Pottery items were only suitable for this atmosphere and temperature. Before displaying and owning the exhibits within the department they have to get clearance from forest department (mainly bones).

4.3.7 Class rooms:

For each classroom facilities like wash basin, chairs and desk , projector were there. Each room is naturally ventilated and spacious.

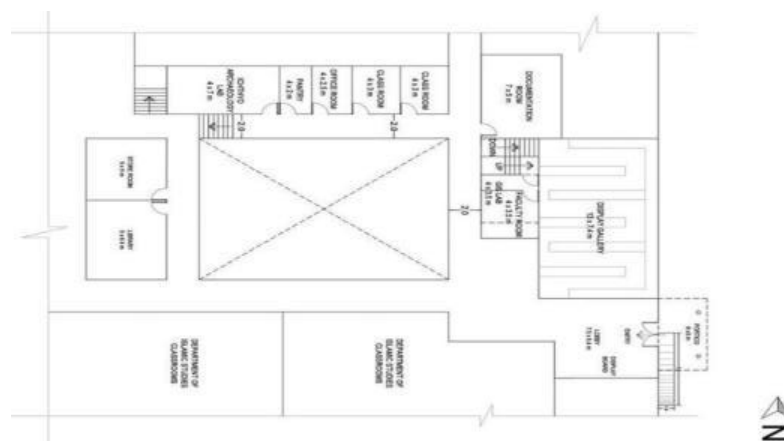


Figure 4.12 Department plan

4.4 NATIONAL MUSEUM, NEW DELHI.

The museum is situated on the corner of Janpath and Maulana Azad road over an area of 7.5 acres with a build up area of about 18,000 sq.m Designed by : Ar. Ganesh Bikaji Deolalikar.

4.4.1 Access to site:

- 1.2 km away from central secretariat metro museum
- 3.8 km from new Delhi railway station
- 14.5 km from Indira Gandhi international Airport
- nearest stops : National museum bus stop

4.4.2 Climate:

- macro climate - humid subtropical
- average temperature - 25.0°c
- maximum temperature - 47.0°c
- annual precipitation - 886 mm
- prevailing wind direct ion - 18 km/hr north-west



Figure 4.13 Location map

4.4.3 About the plan:

Contains three floors with galleries radiating from the central garden court



Figure 4.14 rotunda as a form

- Planned to built in phases
- First phase completed in 1960
- Second phase completed in 1989



Figure 4.15 All floor plan

4.4.4 Circulation:



Figure 4.16 Circulation

4.4.5 Education:

They conduct activities around temporary exhibitions, and also have permanent regular activities. The regular activities are organised twice a year and called “Playtime at the National Museum” . All the educational Programmes are facilitated by experienced personals from the sector of Museums and Culture.

- Summer Winter Workshops Over The Month Of May/June
- Touch And Learn Of Reserve Collection Session
- Story Telling Session In Pre Columbian Gallery
- Clay Workshops
-

4.4.6 Library:

This library contains Books And Journals Related To Field Of History, Art And Culture Of The World for Specialized Research And Reference. The library is open for use by Bonafide research scholars, university students, professors, teachers and fellowship holders.

4.4.7 Auditorium:

- 250 seating capacity
- 190 seats on ground level
- 60 seats in balcony with projector room in between
- balcony usage only for VIP
- used for showing movies of art and culture
- connected with main entrance lobby

4.4.8 Display:

Preparation of permanent and temporary exhibitions, maintenance of galleries, offices and public facilities are maintained by the Department of Presentation and Display. This department is composed of Carpentry unit, Tailoring unit, Painter unit, Artist and Draftsman. Maintenance and monitoring

activities of facilities are attended in consultation and association with the various units of CPWD.

4.4.9 Lighting:

Natural lighting: The whole structure is based on the Central rotunda which lit the Entire building. Courtyard area - 460 sq.m. Diameter - 24 meters.

Artificial lighting: bronze gallery was articulated in different manner even the pillars were used as ad displays of sculptures sitting area was well played with scenography.

4.4.10 Other features:

Museum shop and institute is an additional advent age to the museum separate entrance for VIP and physically handicapped is present resting space has been given at various places benefiting everyone. Building is made of high strength R.C.C and red sandstone. Floor to floor height - 4 m. Only front facade was articulated, rear facade was only plastered. temporary structures are provided around the building. All internal walls are painted according to the theme. All the floors are wooden ,t iles and rubber flooring.

4.4.11 Fire:

- 5000 lit re tank provided at underground pump room - rear side of the building sprinklers - 3m centre to centre
- hydrant : 4
- fire and smoke det ectors are used all over the museum
- heat detectors are present in the Basement ,working on Halogen gas



Figure 4.17 Service plan

4.5 TRIBAL MUSEUM, BHOPAL:

The Museum of Tribal Heritage at Bhopal was designed by Ar. Kamath and was commissioned by the Government of Madhya Pradesh in 2004 since over 30% of the population of the state is tribal. It was important to create an architecture that was informed by their rich culture, evolved over millennia.

4.5.1 Site location:

The museum is located in Shyamala Hills road near the state museum at Bhopal, Madhya Pradesh

- Total area - 7 acres builtup
- Area - 10,286 sq.m

4.5.2 Access to site:

6.9km away from bhopal bus stand, 8 km from bhopal railway station, 14.2 km from raja bhoj international airport

4.5.3 Climate:

- macro climate - hot and dry average temperature - 25.1°C
- maximum temperature - 40.8°C
- minimum temperature - 10.7°C
- annual precipitation - 1132 mm
- prevailing wind direction - 12 km/hr south-west

4.5.4 Aim and Concept:

The Museum is designed to create a built fabric which the tribal communities could identify with, extend, and evolve, to represent themselves and express their own ideas and way of life with ease and spontaneity. While the architecture of the Museum is inspired by tribal rhythms, geometries, materials, forms, aesthetics and spatial consciousness, these very qualities

are now acting as points of inspiration for the display materials being created by tribal artisans, supported by anthropologists, sociologists and social workers.

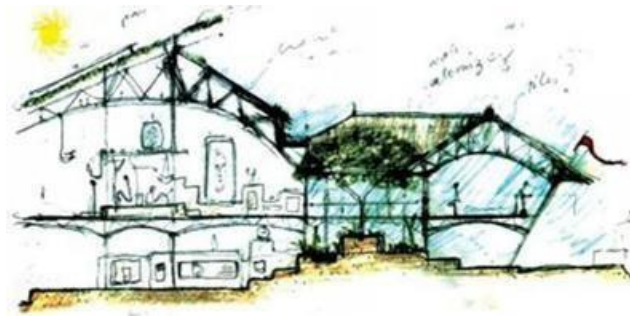


Figure 4.18 Concept sketch of the museum

4.5.5 Circulation:

The circulation of the museum has been developed in a manner to divide the

zoning of areas and make use of every little space at the entrance a person

has 2 choices whether to go to the display museum or to the warehouse. After entering the main museum, circulation path has been defined to make

Visitors go through the same passage and experience the whole museum

- separate passage for peoples with office related works
- special care is taken for physically challenged visitors
- a central area for seating is fatigue

The museum is interactive and has free flowing spaces and the circulation is developed in a manner to divide the zoning of areas and makes use of every little space.

4.5.6 Gallery-1 (cultural diversity):

A glimpse of madhya pradesh's map will be put up in the entire part of the gallery in such a way that visitor will have inkling about state's geographical

contours, hills, plateaus and serpentine path of lifeline Narmadha.

Geographical presence of all the major tribes living in madhya pradesh will be symbolically shown on the map drawn with the help of their important symbols

4.5.7 Gallery-2 (tribal life)

Painted various images on walls with clay and colours display of types of all houses of madhya pradesh tribes (styles, behaviorial, material features) importance given to open courtyard, trees in it, cattle in homes like family members paintings of important household things on walls.

4.5.8 Gallery-3 (tribal aesthetic):

Aesthetic sense among tribals prevails so intensely that everything they use reveals their artistic perceptions with striking originality. Even simplest things like broom or grinding stone are touched by aesthetics. This Gallery explains how life of a tribal family perceives art and aesthetics in everyday life. We find an octagonal wedding canopy under the shades of four beautifully carved trees, which represent myths from four different tribes. These trees symbolize the Origin of Life, life cycle, tales glorifying the life of ancestors, designs on important rituals have been represented with profoundest understanding of art.

4.5.9 Gallery-4 (tribal spiritual world):

Thorny trees made on wall of the corridor Unending and unlimited possibilities of time and space. Building like dust particle in context

4.5.10 Gallery-5 & 6 (exhibition & guest gallery):

Efforts are being made to grasp specialities of all Tribal communities by linking them with meaningful exhibit depicting tribal affinity through physical objects lane with dwellings of potter, washer man, ironsmith/ blacksmith and their tools have been displayed pictorial and written documentation of games of children of various tribal communities playing images have been prepared using terracotta, hollows of dried gourd, hemp, paper pulp.

4.5.11 Lighting:

Natural lighting: Courtyards punctures the built mass by bringing the air and light and creates a stack effect as well as a favorable environment while it enables the roof forms to establish modulated scales and composition. This creates a cooler environment inside the structure. Perforated lighting is also used to illuminate the spaces. Bamboos were used in corridors for shading.

Artificial lighting: Spot lighting and task lighting is used partially comparing the ambient lighting to balance the shadow and luminance

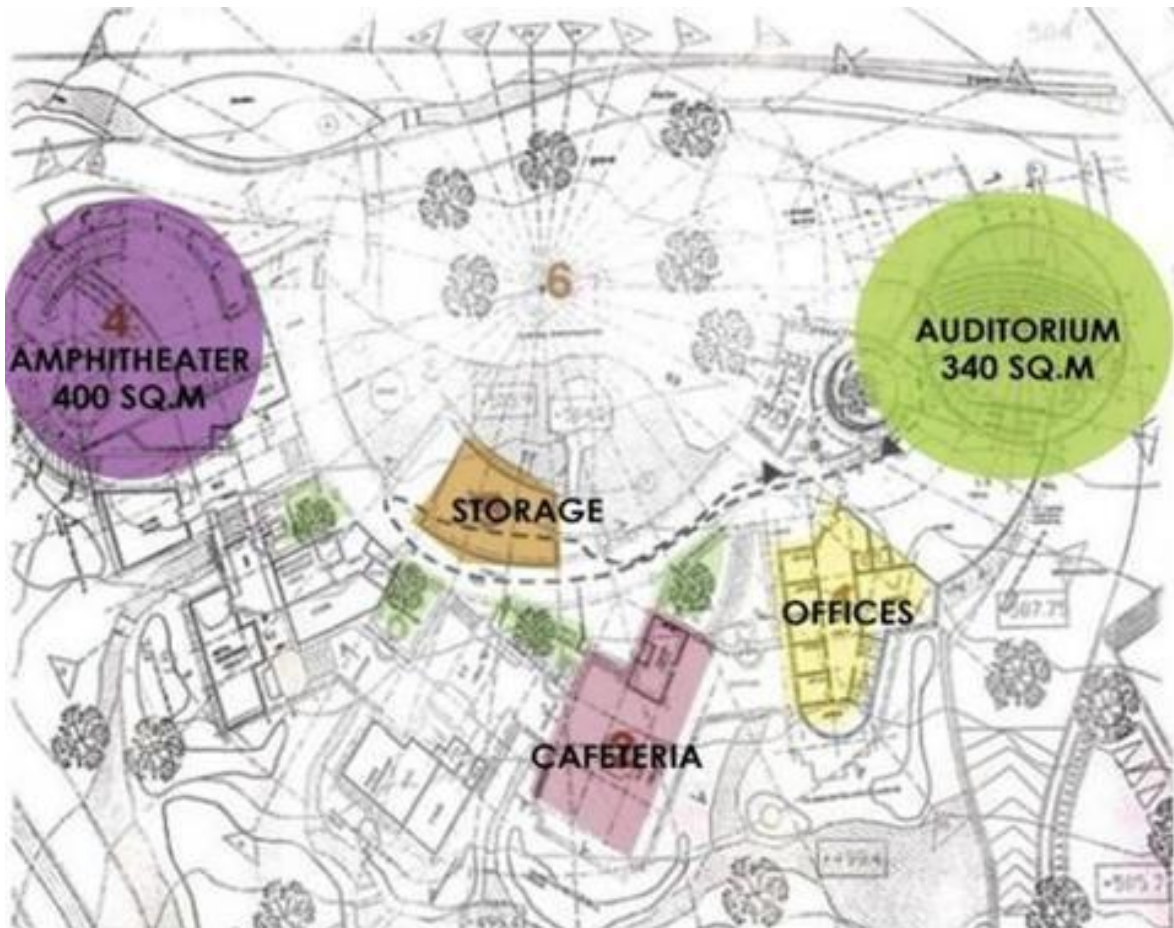


Figure 4.19 Basement plan

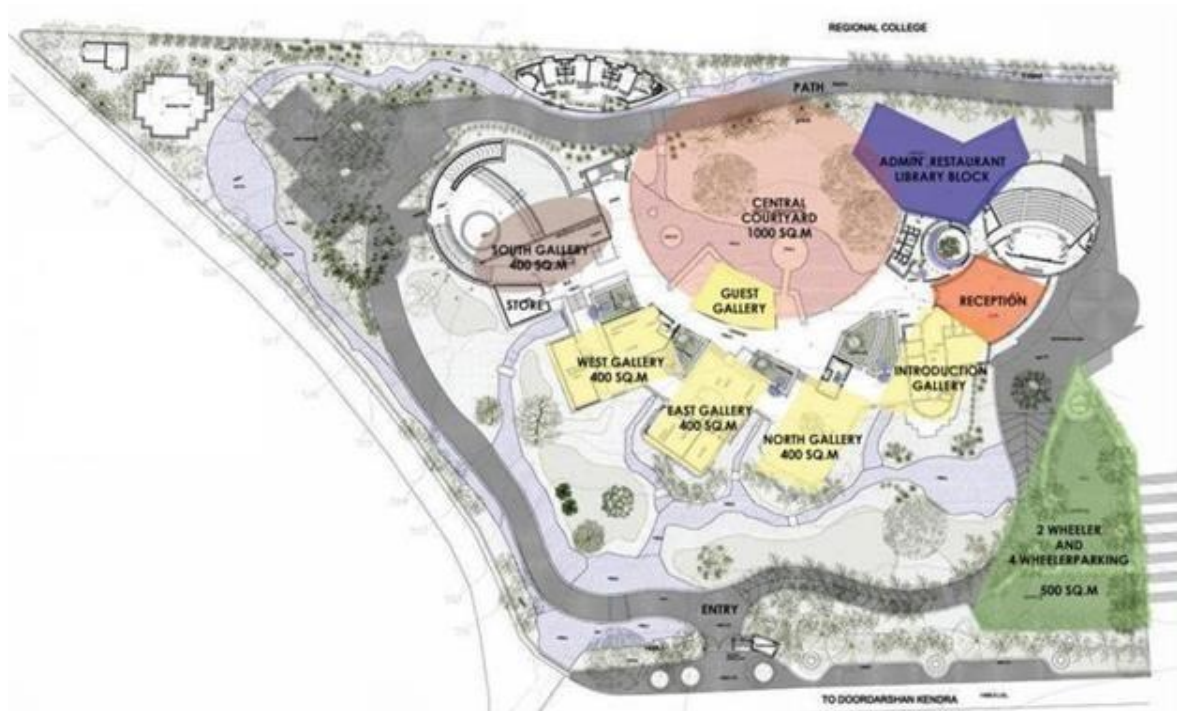
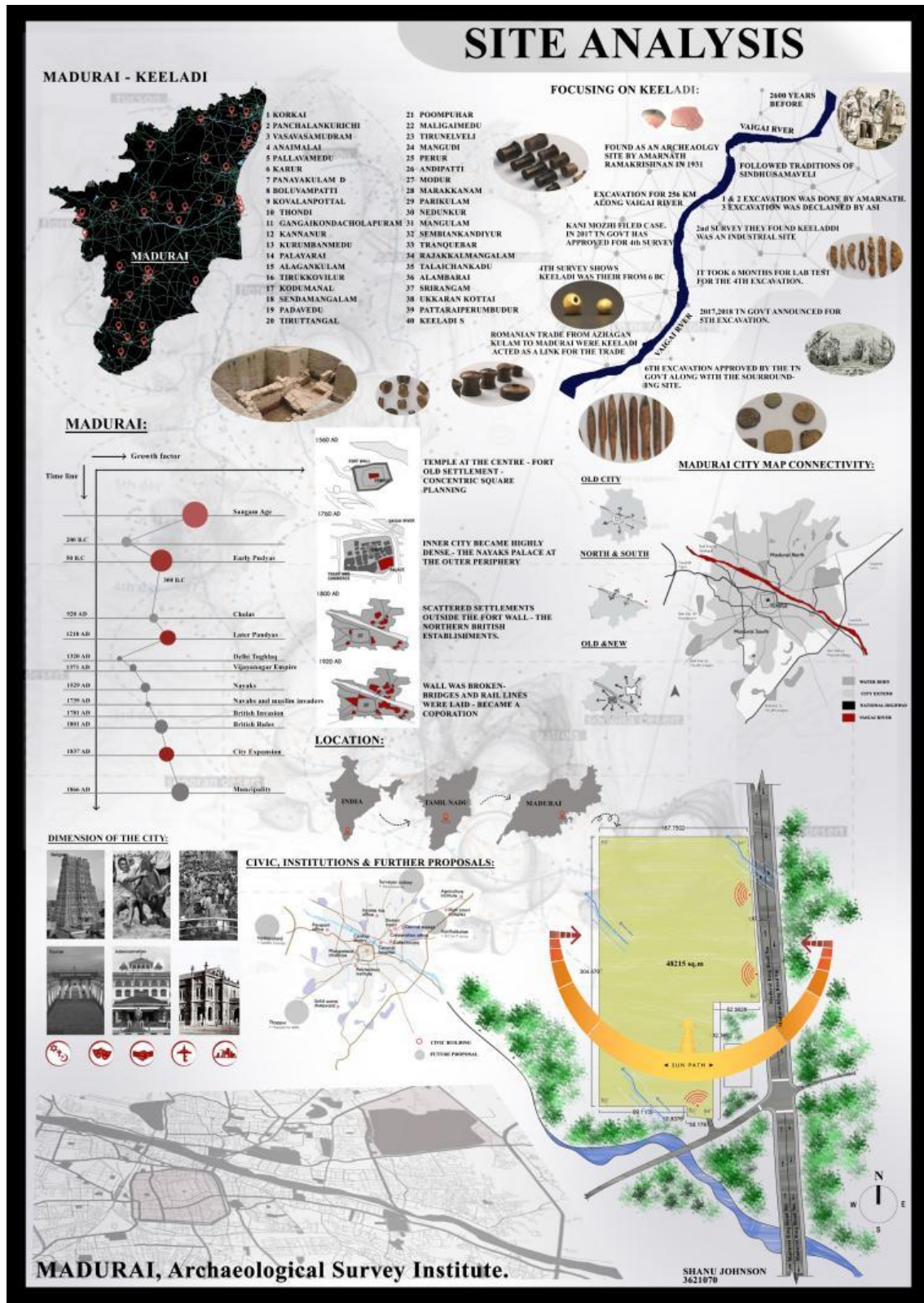


Figure 4.20 Ground floor plan.

CHAPTER 5 – ARCHITECTURAL DESIGN APPROACH

5.1 SITE ANALYSIS:



MADURAI :

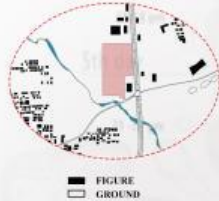


SITE ANALYSIS

NEIGHBORHOOD CONTEXT:



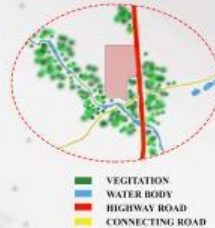
FIGURE AND GROUND:



LAND USE:



LANDSCAPE:



SCHOOLS AND INSTITUTION:



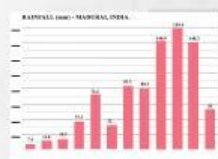
CLIMATE STUDY:

TEMPERATURES AND PRECIPITATION:



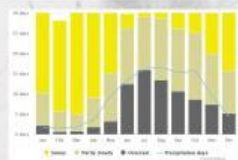
The solid red line shows the maximum temperature of an average day for every month. Solid blue line shows the average minimum temperature. The days and cold nights (dashed red and blue lines) show the average of the hottest day and coldest night of each month of the last 30 years.

RAINFALL:



The diagram for Madurai shows the days per month, during which the wind reaches a certain speed.

TEMPERATURES AND PRECIPITATION:



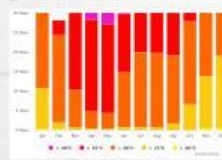
The graph shows the monthly number of sunny, partly cloudy, overcast and precipitation days. Days with less than 20% cloud cover are considered as sunny, with 20-40% cloud cover as partly cloudy and with more than 40% as overcast.

WIND SPEED:



The diagram for Madurai shows the days per month, during which the wind reaches a certain speed.

TEMPERATURES:



The maximum temperature diagram for Madurai displays how many days per month reach certain temperatures.

PRECIPITATION AMOUNTS:



The meteorological climate diagrams are based on 30 years of hourly weather model simulations and available for every place on Earth. They give good indications of typical climate patterns and expected conditions (temperature, precipitation, sunshine and wind). The simulated weather data have a spatial resolution of approximately 30 km and may not reproduce all local weather effects, such as thunderstorms, local winds, or tornadoes.

RAILWAY AND AIRPORT CONNECTIVITY:



- S**
- Rich in history and temples.
 - Well connected to road network.
 - Archaeological site where ancient materials are being found.
 - Well developed and developing area.
- W**
- Noise pollution.
 - Lack of green area.
 - High humidity.
 - Absence of institutional tourism promotion.
- O**
- The presence of traces of other culture in that area.
 - Avoidance in modern archaeological survey.
 - Opportunity to further expand visitors number via visual presence.
- T**
- Irregular supply of equipments.
 - Pollution and synthetic challenge.
 - Lack of corporate identity/organizational culture.

COMPARATIVE ANALYSIS AND POPULATION GROWTH IN MADURAI FROM 1990 TO 2015



5.2 FINAL REQUIREMENTS:

Table 5.1 Area statement.

SPACE REQUIRED	AREA REQUIRED IN SQ.M
INSTITUTION	
Office / Reception	30
Waiting area	55
HOD room	20
Chairman room	20
Meeting room	60
p.hd staff room	15
Staff room	140
Storage	35
Toilet	20
VIP room	15
Cafeteria	110
Store	15
Classroom	70
Toilet	70
Auditorium	500
Library	410
Storage	40
IT room	100
Sick room	25
Activity room	50
Archaeo zoology lab	75
Storage	15
Anthropology lab	110
Storage	10
Instrument room	15

Chemical lab	170
Storage	20
Instrument room	25
HOSTEL	
Boys hostel (18 rooms with two bed each)	20
Waiting area	25
Warden office	10
Warden room	20
Reception area	15
Laundry	45
Gym	45
Girls hostel (18 rooms with two bed each)	20
Waiting area	25
Warden office	10
Warden room	20
Reception area	15
Laundry	45
Gym	45
STAFF QUARTERS	
Room (8 room with 2 bed each)	20
Toilet	5
Kitchen & dinning	15
Living room	15
Open terrace	10
Reception area	25
Receptionist room	20
Meeting room	25
MESS	
Kitchen	30
Storage	30

Staff rest area	20
Serving area	15
Utility area	15
Seating area	200
Wash area	30
Toilet	60

RESEARCH CENTRE

Reception area	20
Security room	20
IT room	35
Cafeteria	100
Kitchen	10
Toilet	45
Meeting room	60
Managers office	10
Office (9 units)	10
VIP room	15
Toilet	5
Seminar hall	125
Lab 1	110
Storage / Instrument room	25
Lab 2	140
Storage / Instrument room	20
Lab 3	110
Storage / Instrument room	25
Lab 4	110
Storage / Instrument room	20
Open garden	35

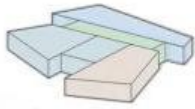
MUSEUM

Ticket counter	20
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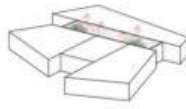
Locker room	10
Gallery 1	140
Gallery 2	140
Gallery 3	100
Gallery 4	100
Toilet	50
Shop	230
Managers office	35
Office	20
Security room	20
Cafeteria	100
Storage	10
Electrical room	15
Record room	20

CHAPTER 6 – CONCEPT

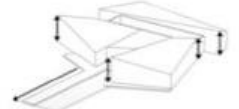
6.1 CONCEPT:



**ORGANISING THE
BUILDING INTO FOUR
MAJOUR FUNCTIONS**



**ADDING COURTYARD IN THE CENTER
FOR VISUAL CONNECTION AND TO
ALLOW CIRCULATION OF WIND
WITHIN THE BUILDING.**



**ADJUSTING THE HEIGHT TO
THE NEEDS OF A ROOM SPACE
TO INCREASE THE QUALITY OF
SPACE.**

CHAPTER 7 – ARCHITECTURAL DRAWING

7.1 SITE PLAN:

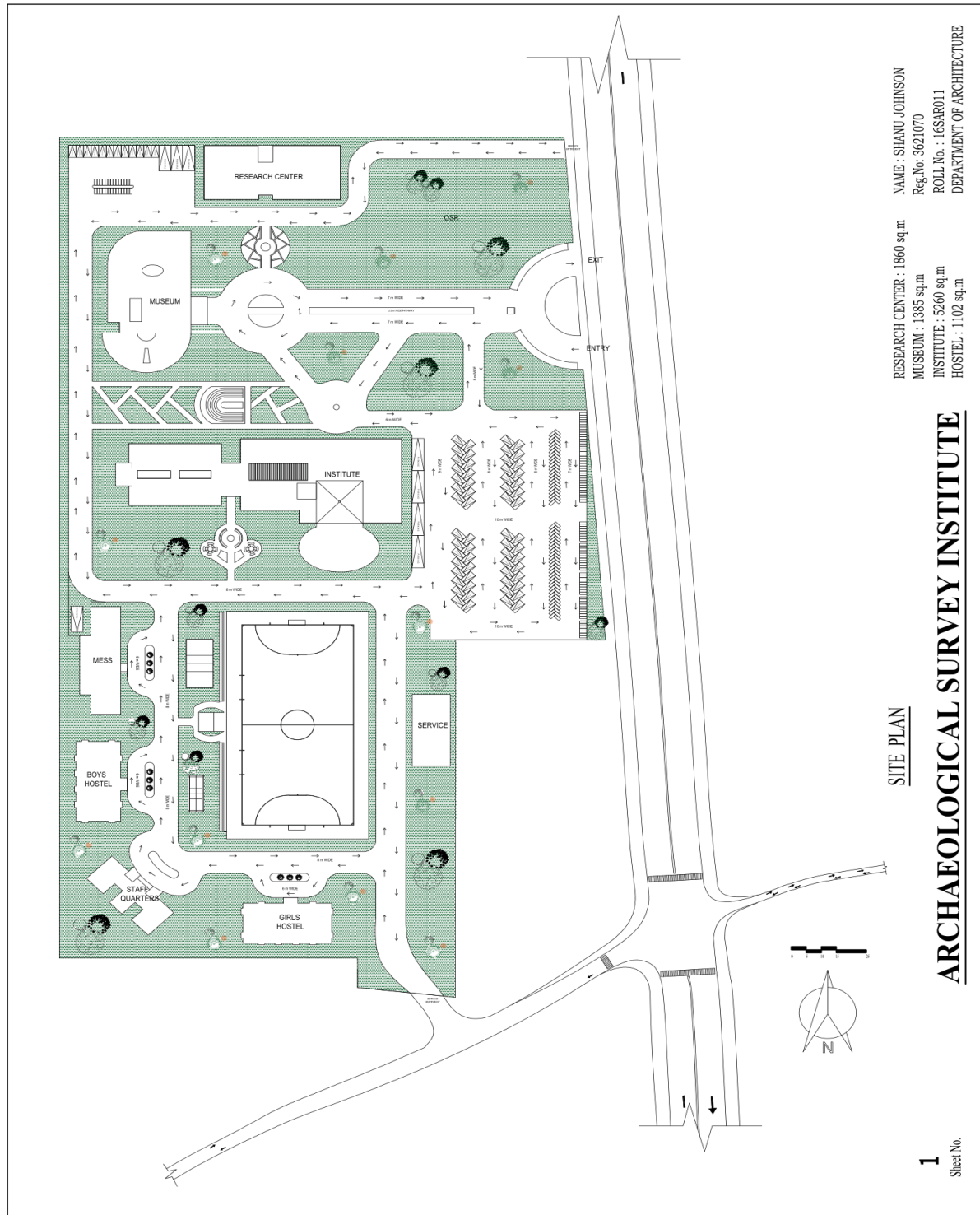


Plate 6.1 Site plan

GROUND FLOOR PLAN

SECTION AA'

INSTITUTE

ARCHAEOLOGICAL SURVEY INSTITUTE

NAME : SHANU JOHNSON
Reg.No: 3621070
ROLL No. : 16SAR011
DEPARTMENT OF ARCHITECTURE

RESEARCH CENTER : 1860 sq.m
MUSEUM : 1385 sq.m
INSTITUTE : 5260 sq.m
HOSTEL : 1102 sq.m

2
Sheet No.

44

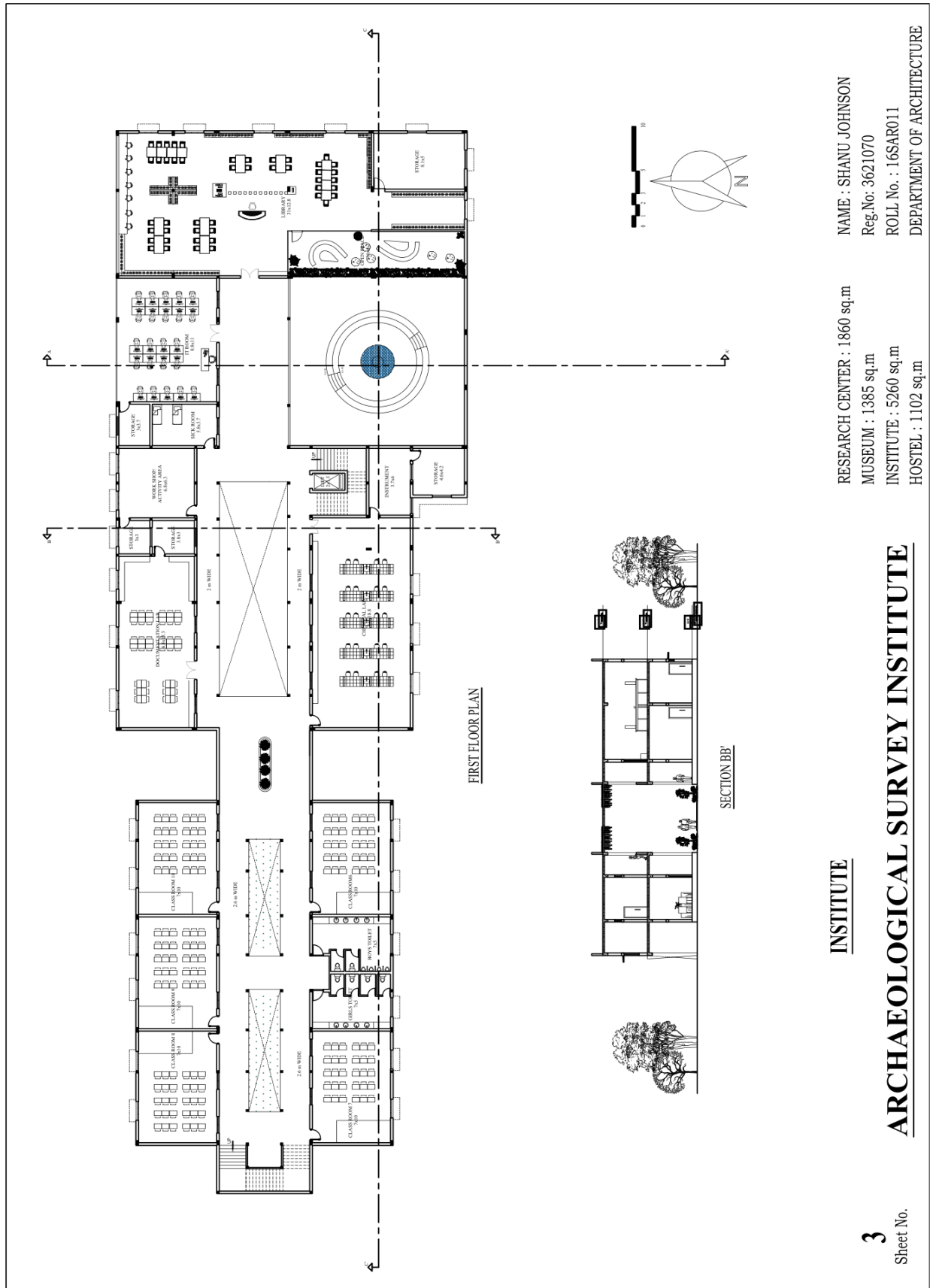


Plate 6.3 First floor plan - Institute

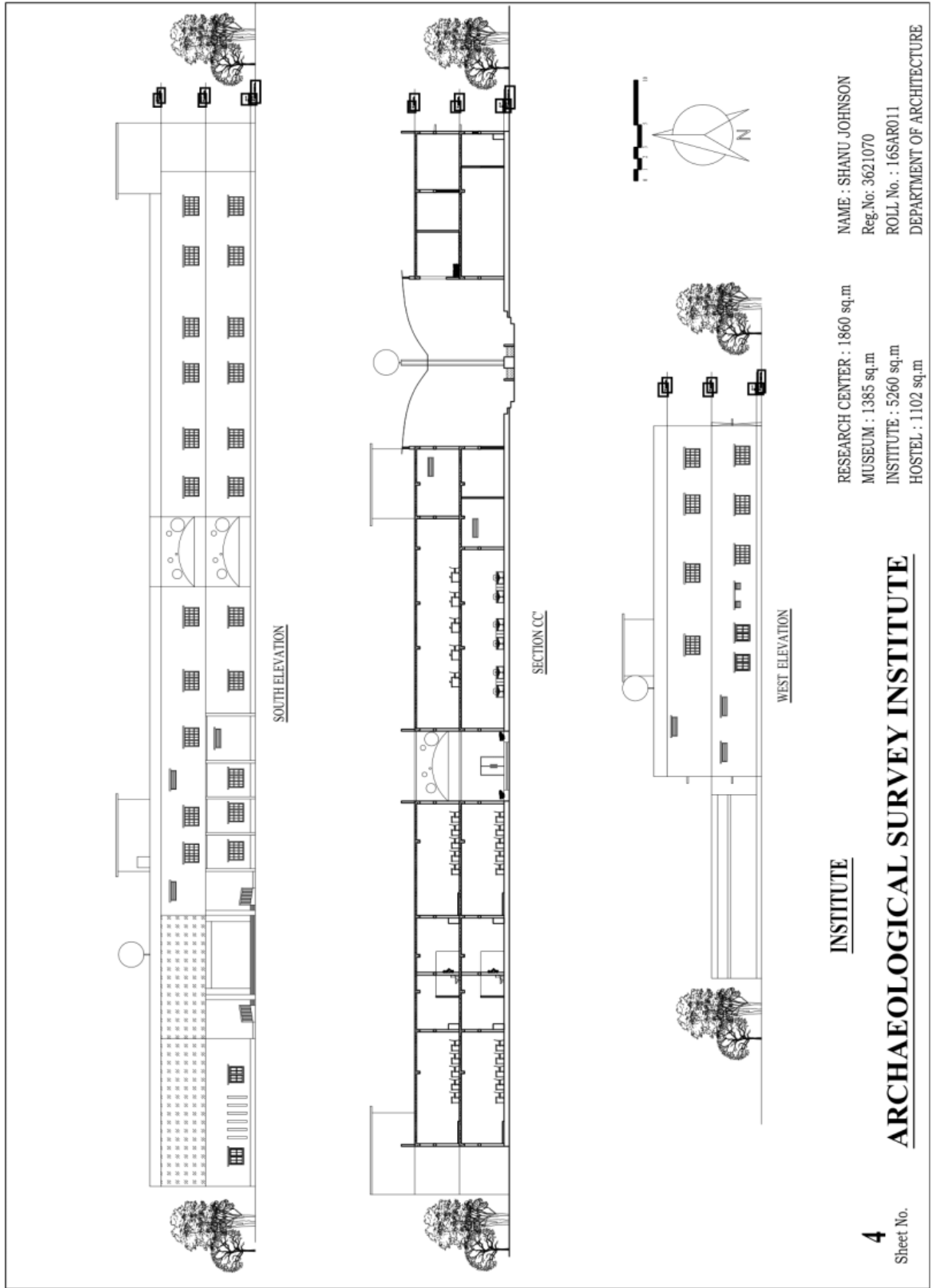


Plate 6.4 Section and Elevation - Institution

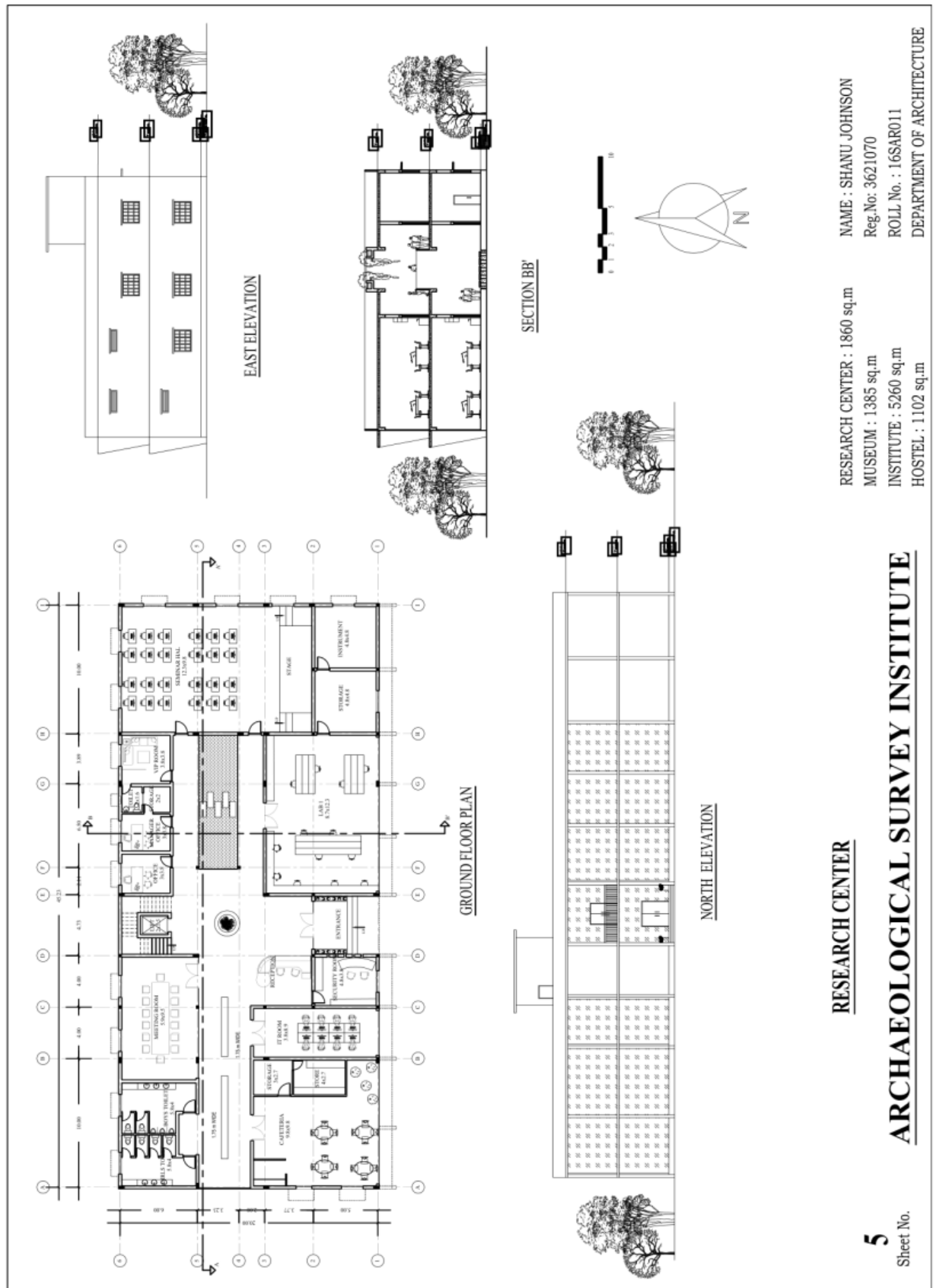


Plate 6.5 Ground floor – Research center

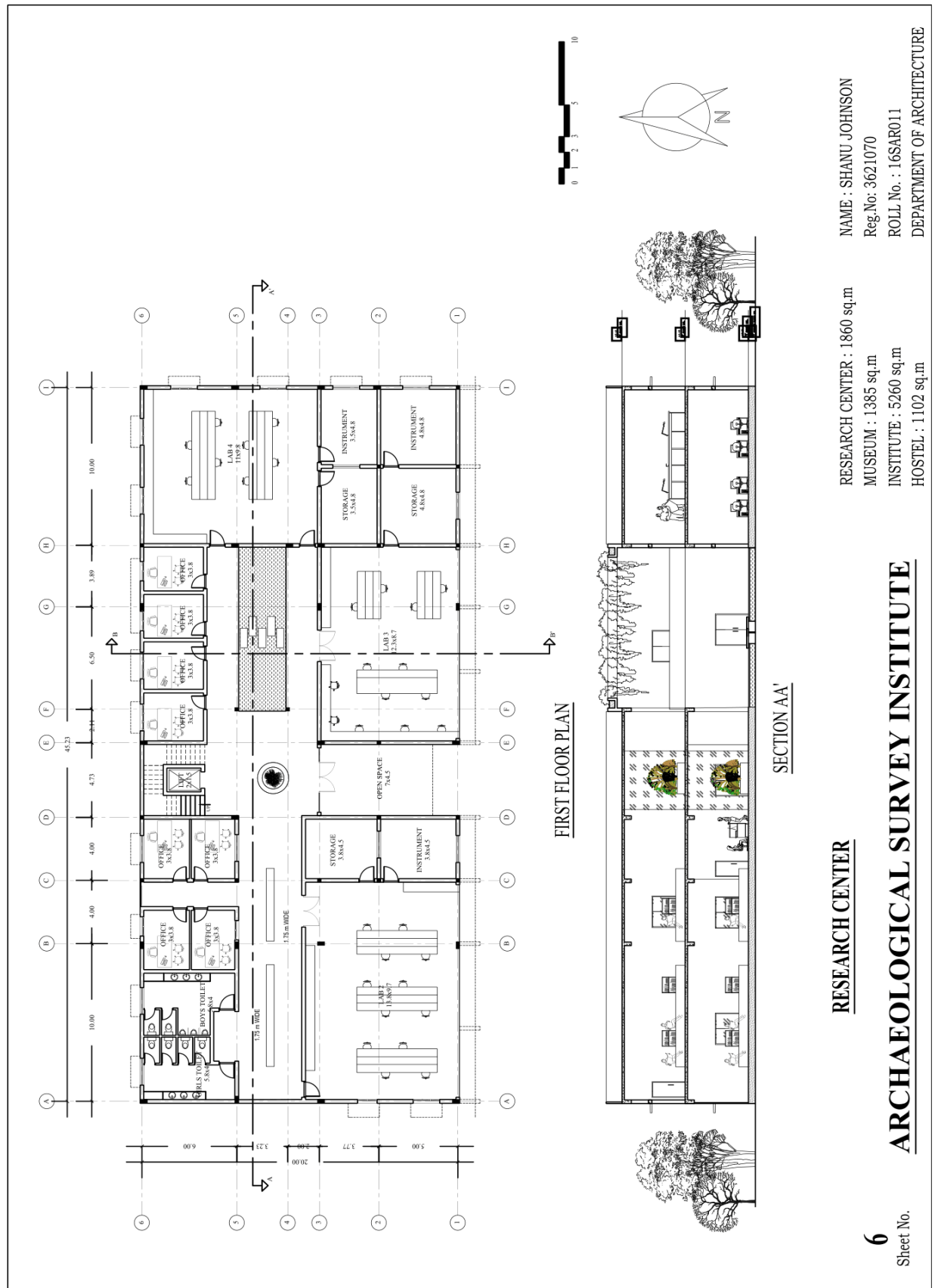


Plate 6.6 Second floor – Research center

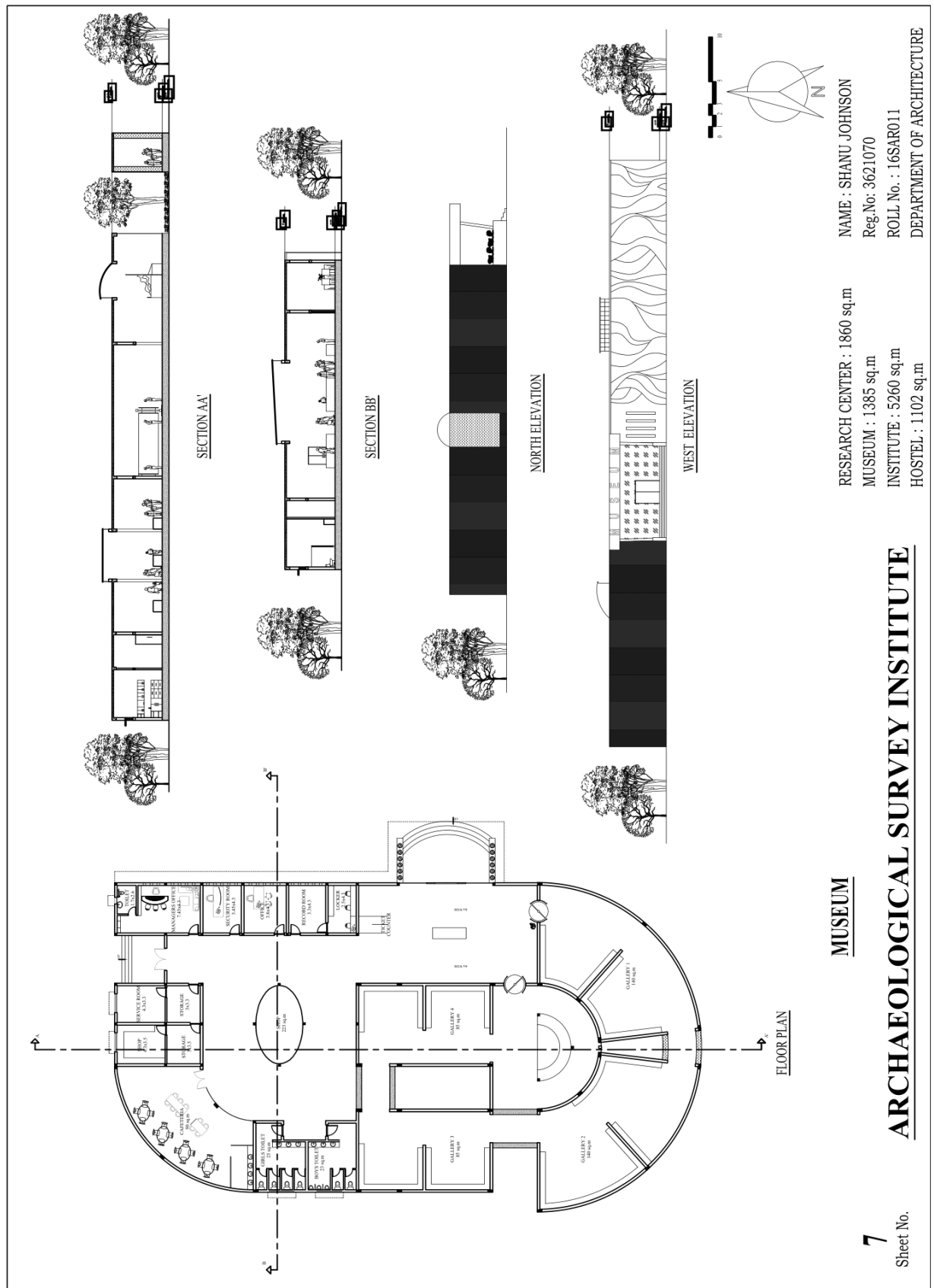


Plate 6.7 Museum floor plan

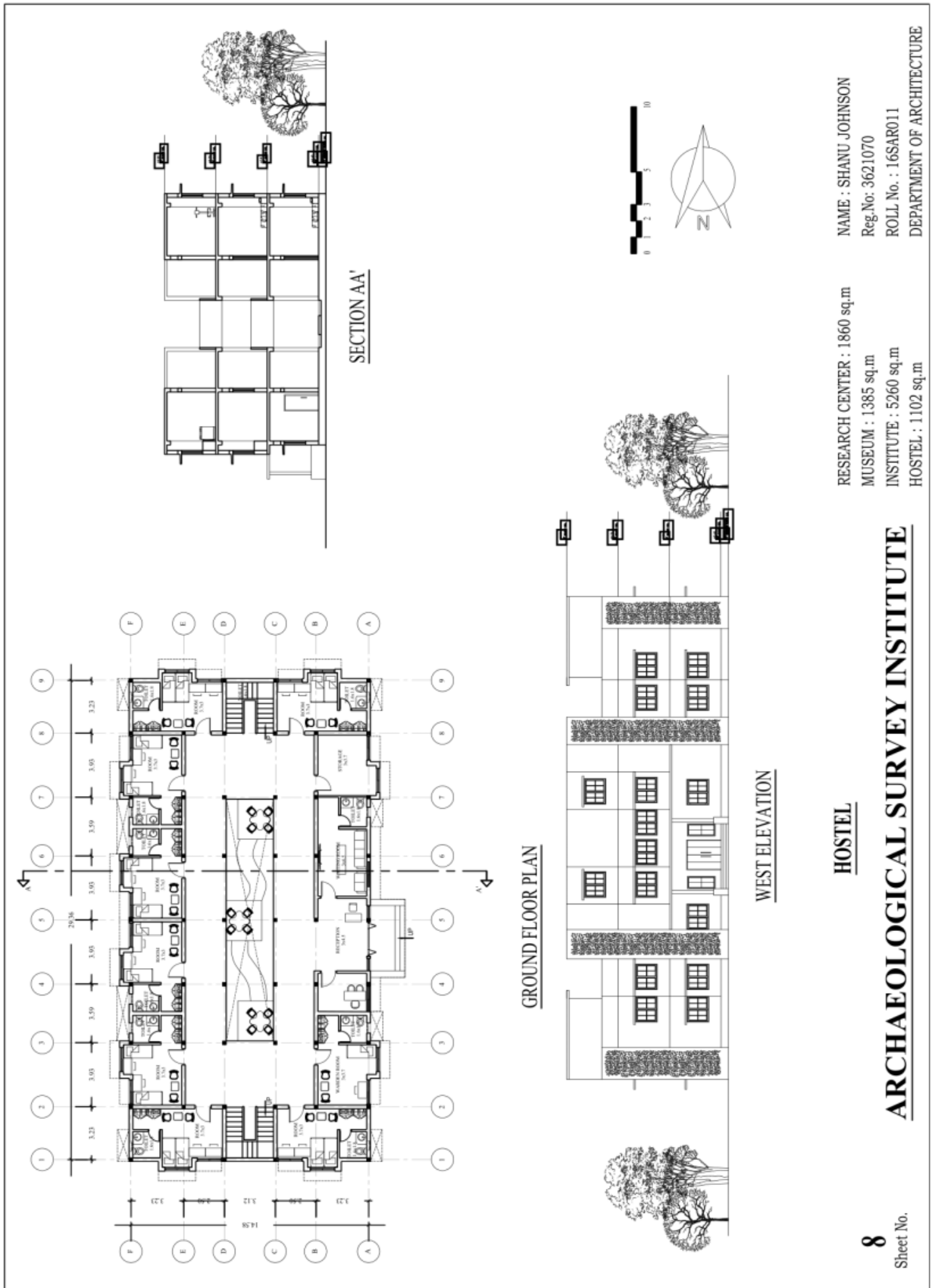
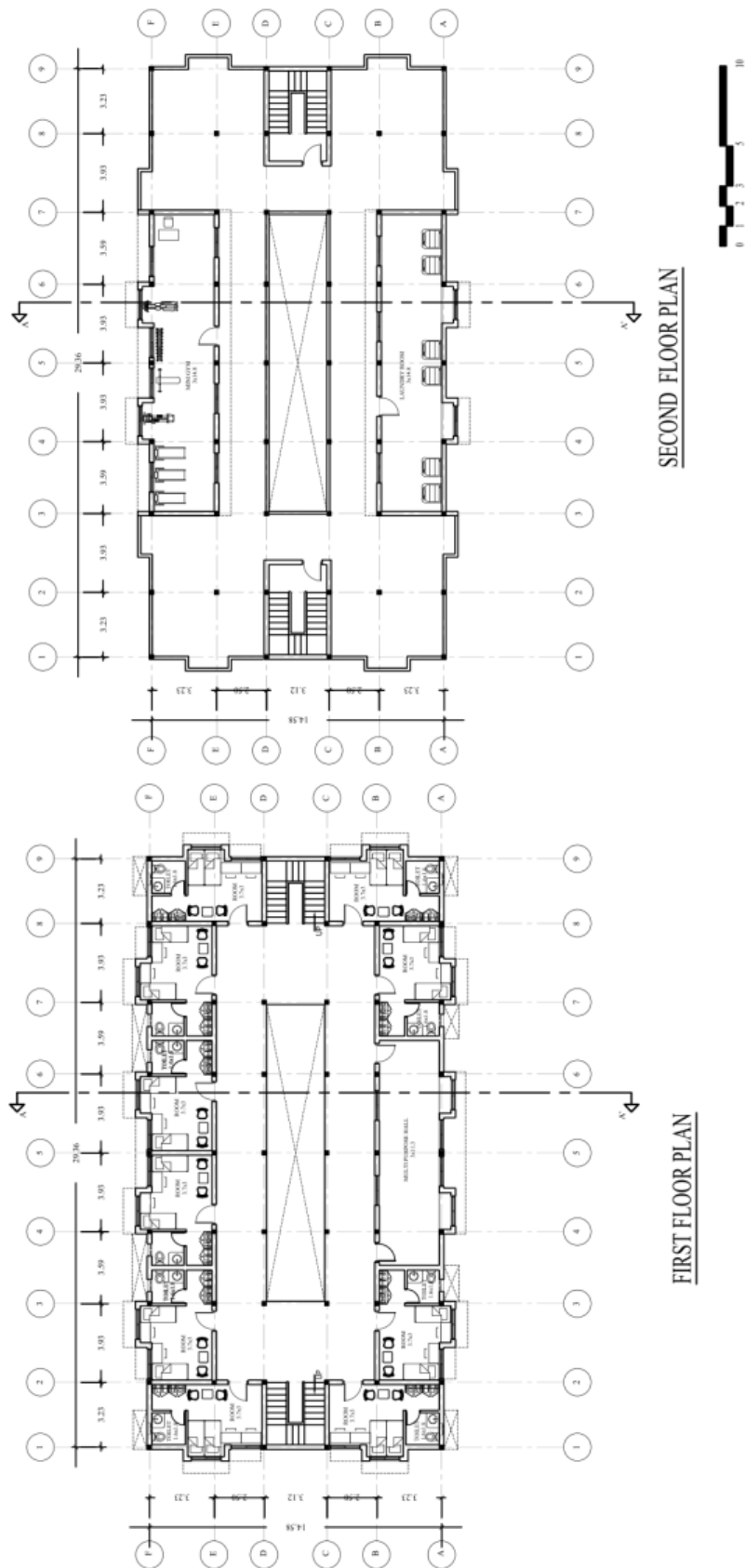


Plate 6.8 Ground floor - Hostel



HOSTEL

RESEARCH CENTER : 1860 sq.m
MUSEUM : 1385 sq.m
INSTITUTE : 5260 sq.m
HOSTEL : 1102 sq.m

NAME : SHANU JOHNSON
Reg.No: 3621070
ROLL No. : 16SAR011
DEPARTMENT OF ARCHITECTURE

ARCHAEOLOGICAL SURVEY INSTITUTE

Sheet No. 9

Plate 6.9 First floor - Hostel

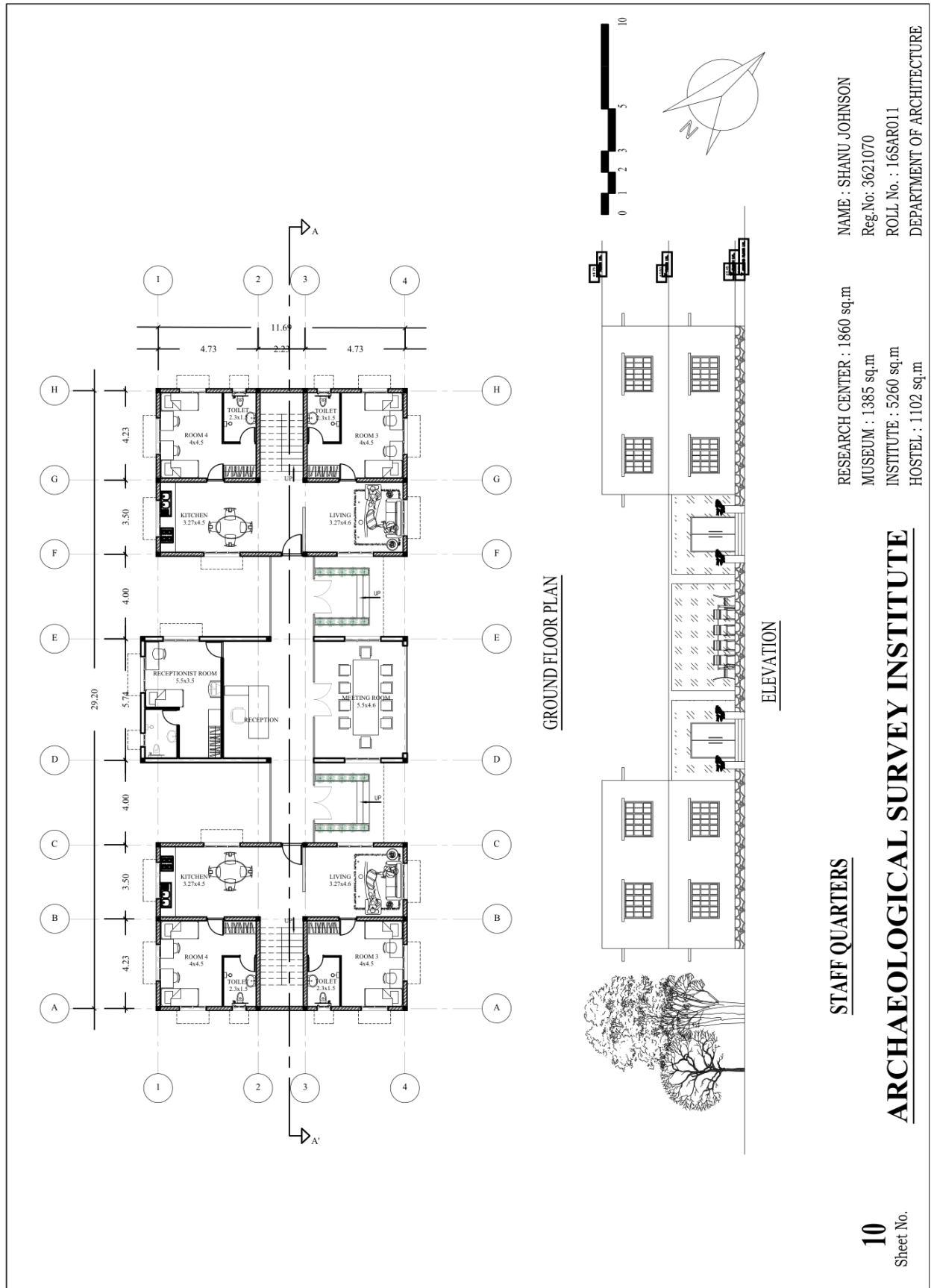


Plate 6.10 Ground floor – Staff Quarters

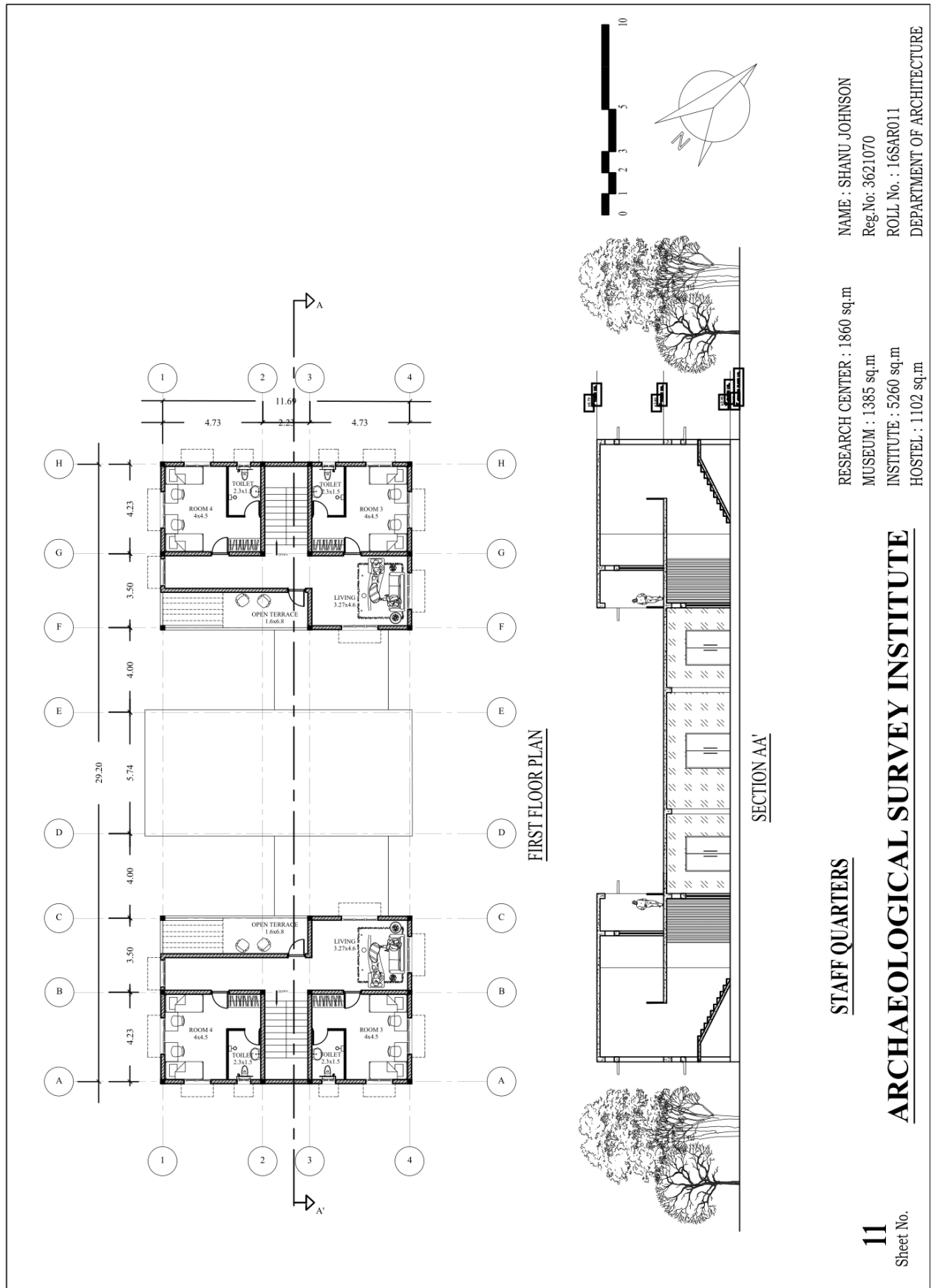


Plate 6.11 First floor – Staff Quarters

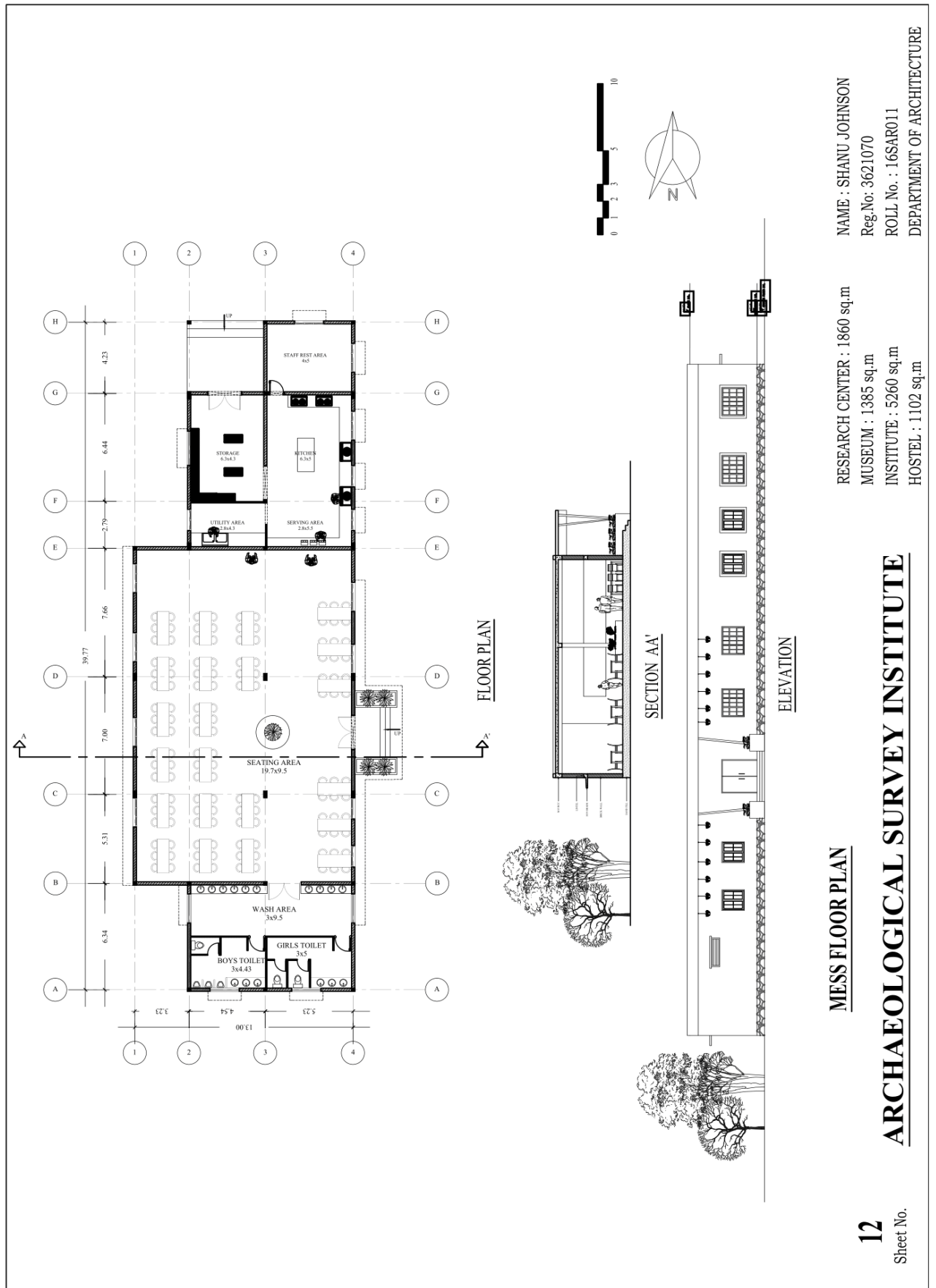
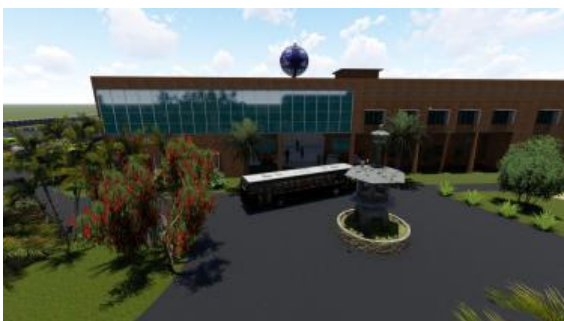
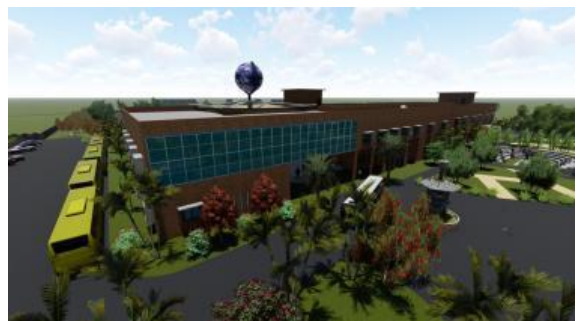


Plate 6.12 Mess floor plan

7.3 INSTITUTION VIEWS:



7.4 RESEARCH CENTER VIEWS:



7.5 MUSEUM VIEWS:



7.6 STAFF QUARTERS VIEWS:



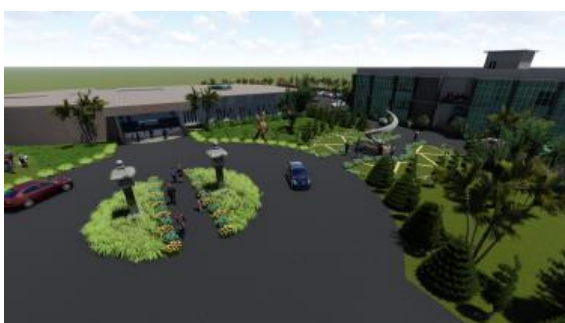
7.7 MESS VIEW:



7.8 HOSTEL VIEWS:



7.9 ARIEL VIEWS:





CHAPTER 8 – REFERENCE

8.1 REFERENCE:

- <https://www.thehindu.com/news/national/tamil-nadu/unearthing-an-ancient-civilisation/article29856930.ece#:~:text=More%20than%2010%2C000%20artefacts%20have,Sangam%2Dera%20tank%20measuring%201x1.>
- <https://www.tamilnadutourism.com/blog/keeladi-excavation-a-revelation-that-rewrites-the-history-of-tamil-nadu/>
- <https://architectures.jidipi.com/a258865/korean-institute-for-archaeology-environment/>
- <https://www.jstor.org/journal/archrepo>
- <https://www.britannica.com/science/archaeology>
- <https://www.archaeology.org/news>
- <https://indusscrolls.com/digging-into-the-past-divisive-and-sectarian-politics-in-tamil-nadu/>