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SDG 11

Sustainable Development Goals

11.4.7

DEPARTMENT OF ARCHITECTURE

LAHORE COLLEGE FOR WOMEN, UNIVERISTY, LAHORE

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Architectural Studio VIII

SEMESTER VIII

SESSION 2016- 2021

DEPARTMENT OF ARCHITECTURE

LAHORE COLLEGE FOR WOMEN, UNIVERISTY, LAHORE

COURSE INTRODUCTION

COURSE CONTENTS:

The course content based on understanding knowledge of contemporary urban transformation processes and context-based design methods. It tends to analyze, comprehend, and design intricate urban environments. The insights gained are expressed through visionary and strategic thinking, concept development, and the design of urban spaces. The studio seek to provide a comprehensive package linking urban design, theory, research and practice. The main focus is given on Spatial planning system, Knowledge of contemporary ideas of shaping space in cities, Identify principles of formulating local zoning plans for advanced urban complexes using the applicable notation. Knowledge which takes into consideration the interdisciplinary character of circumstances of urban planning.

COURSE SYNOPSIS:

The well explicit application of theories in design are formulated as projects for students of Architectural Design Studio VIII to transform the literal and projected meanings of theoretical concepts into design practice. The foci of studio comprises complex, creative, exploratory and advanced design assignments in background of national as well as international practices. An integrated emphasis is built through comprehensive layout of architectural design assignments. The design projects in Studio VIII correspond to urban development, planning and design. Experimenting with different solutions using knowledge of architectural theories and contemporary concepts to a high level of practicality is taught to students. A thorough sense of urban realm, exchange of intra-city resources and sustainability is developed in students' architectural design capability; that the students learn through various instruments of applied and basic research.

COURSE INTRODUCTION

COURSE LEARNING OUTCOMES:

The projects assignments are based on contemporary urban themes such as design and densification of urban nodes and quarters, revitalization of former theories, and sustainable transformation of our city landscape. The students gain an advanced understanding on the inner logic of urban design and practical experience. This enables them to tackle complex urban challenges, and to synthesize their knowledge into a design project at the interface between planning, architecture and landscape architecture. The students are assigned to develop complex urban design and architectural projects, by critically reflecting and integrating relevant design criteria such as heritage, mobility, public space, landscape, morphology, density, building typology, materiality.

- **GRADING POLICY:**

<table>
<tr><td colspan="4">TERM
CLASS ASSESMENT 30 %</td><td colspan="4">FINAL TERM
EVALUATION 70%</td><td rowspan="2">TOTAL</td></tr>
<tr><td colspan="2">TEST 1</td><td colspan="2">TEST 2</td><td colspan="3">FINALS</td><td>ATTENDANCE</td></tr>
<tr><td colspan="2">Marks 15</td><td colspan="2">Marks 15</td><td colspan="3">Marks 65</td><td rowspan="3">Marks 05</td><td rowspan="3">100</td></tr>
<tr><td>Class Discussion</td><td>Test</td><td>Class Discussion</td><td>Test</td><td>Final Project</td><td>Jury</td><td>Viva</td></tr>
<tr><td>Marks 05</td><td>Marks 10</td><td>Marks 05</td><td>Marks 10</td><td>40</td><td>25</td><td>-</td></tr>
</table>

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COURSE INSTRUCTOR

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PROJECT INTRODUCTION

REPLANNNING & REDEVELOPMENT OF GOVERNMENT OFFICERS HOUSING COLONY, WAHDAT ROAD LAHORE

DEPARTMENT OF ARCHITECTURE

PROJECT INTRODUCTION

PLANNNING & RE DEVELOPMENT HOUSING COLONY OF GOVERNMENT OFFICERS WAHDAT COLONY LAHORE

LOCATION:

The site is in Lahore Wahdat Town is already a Housing Colony for Government Officers Wahdat town Lahore.

PROJECT OBJECTIVES:

Following objectives should be achieved in the context of housing scheme design:

- Provision of spaces which offer scope for compatible social communal activities adjacent to living areas
- Establishment of sustainable housing community to maximize human well-being and minimize environmental load

'Roof over the head' –is a struggle that millions in Pakistan are still caught with. A viable housing policy is still to be established to appreciate Housing Industry as a social need as well as productive sector of economy. The productivity of design of a Housing Scheme depends on the balance between a range of factors including accessibility, security, safety, privacy, and community interaction, availability of

PROJECT INTRODUCTION

KEY CONSIDERATIONS, REQUIRED FOR ACHIEVING QUALITY IN DESIGN OF A HOUSING SCHEME:

- **LAND USE, LANDSCAPE AND ECOLOGY**

The existing topographical environment of the site should be respected. Earthworks should be minimized, as far as possible, every effort should be made to retain existing trees and vegetation. Indigenous species should be chosen for landscape design of Housing scheme.

- **SUSTAINABILITY AND ENERGY EFFICIENCY**

a. Sustainability in context of a single house/unit/family involves:

i. Location of a house close to shops, schools, workplaces, and transport nodes
ii. Optimizing the energy performance of the residential unit/building so as to reduce CO2 emissions. (Generalized goal of reducing energy dependency on electricity by 40%)
iii. Maintenance of High Quality Indoors
iv. Preferred Use of materials which are sustainable and locally available.
v. Effectiveness of Design for Future Growth

b. Energy Efficiency

i. Provision of shading devices in buildings in relation to solar gains, orientation
ii. Orientation of Houses and other Buildings to significantly benefit from day lighting.
iii. Thermal Insulation should be introduced as an integrated approach at initial stages of design so as to qualify for parameters for an energy efficient design.

ARCHITECTURAL DESIGN:

i. NEED BASED APPROACH:

- Access for people with disabilities
- Changing /Varying needs of occupants as per age groups
- Durability and Performance of a Building
- Optimal Use of Infrastructure to avoid Urban Sprawl

i. SOCIALLY RESPONSIBLE APPROACH:

- Accommodation type, Support Services and Purpose based Division of spaces determine socially responsible character of a design
- Accessibility and Adaptability as per changing needs of lifetime of users.
- Security, Health and Safety are also key concerns to meet requirements of circulation inclusive of pedestrian, vehicular and service vehicles

i. PRESERVING ENVIRONMENTAL AND CULTURAL HERITAGE

- The scheme must provide a pleasant living environment to respond appropriately to context of aesthetically pleasing and human in scale. The neighborhood and cultural heritage must also be elaborated in design solution.

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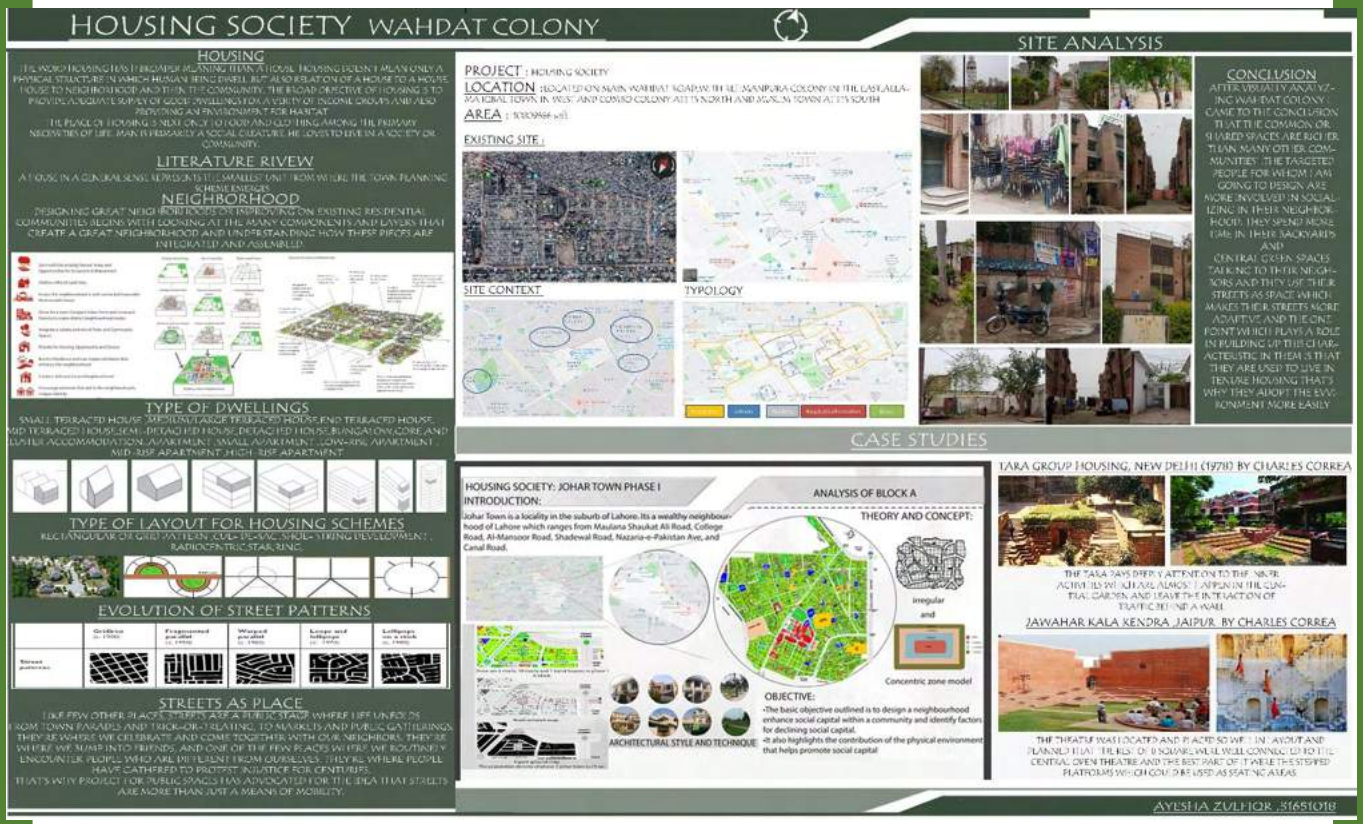
STUDENT PROJECT 01



REPLANNNING & REDEVELOPMENT OF GOVERNMENT OFFICERS HOUSING COLONY, WAHDAT ROAD LAHORE

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STUDENT PROJECT 01

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STUDENT PROJECT 02

REPLANNNING & REDEVELOPMENT OF GOVERNMENT OFFICERS HOUSING COLONY, WAHDAT ROAD LAHORE

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STUDENT PROJECT 02

REPLANNNING & REDEVELOPMENT OF GOVERNMENT OFFICERS HOUSING COLONY, WAHDAT ROAD LAHORE

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HOUSING SOCIETY

LITERATURE

WHAT IS HOUSING SCHEM?

A theory about (housing) architecture aims to
say something about what(housing) architecture is
- In itself (as typologies, as spatial and aesthetic configurations etc)
- In relation to other societal fields

The role of housing in shaping society – providing social change

TARGETS TO ACHIVE AFOREDABLE HOUSING SCHEME:

FLEXIBILITY AND VARIABILITY

Flexibility and variability enable one to change the living environment according to the new requirements in the course of their existence. It can be applied to urban and architectural design related to the actual and future needs of the people living there. In the urban context it applies mainly to the structure of amenities of a city and community in order to design specific areas for shops, services, offices, leisure and culture.

GATED COMMUNITY

Gated communities comprise physical areas that are fenced or walled off from their surroundings. The entrances to these areas are usually prohibited or controlled by means of gates or similar physical obstacles.

HOUSING AMENITIES AND UTILITIES

the terms "housing amenities" and "utilities" represent a very important part of architectural and urban planning design.
In the urban context it applies mainly for the structure of amenities of a city and the community in order to design specific areas for shops, services, offices, leisure, health and education facilities and culture. It also includes the quality of design of semi-private and public spaces.

MIXED-USE HOUSING

Mixed-use development offers numerous benefits to its inhabitants. However, the most frequently stated benefits of this development pattern are sustainability and compliance with housing needs. Mixed-use may be developed at three scales, namely mixed-use buildings, mixed-use parcels/sites and mixed-use walkable/transit areas.

PATTERN

a pattern is an explicit description of the rules governing the construction of the built environment and the processes of giving

SOCIAL DIVERSITY

Social housing diversity and housing availability are significant factors in the phenomenon of city formation; they introduce a very wide scope of problems connected with the social and economic aspects of life.

- Connected
- Spacious
- Accessible
- Adaptable
- Pleasurable
- Manageable
- Sociable
- Green

PLANNNING & RE DEVELOPMENT HOUSING COLONY OF GOVERNMENT OFFICERS WAHDAT COLONY LAHORE

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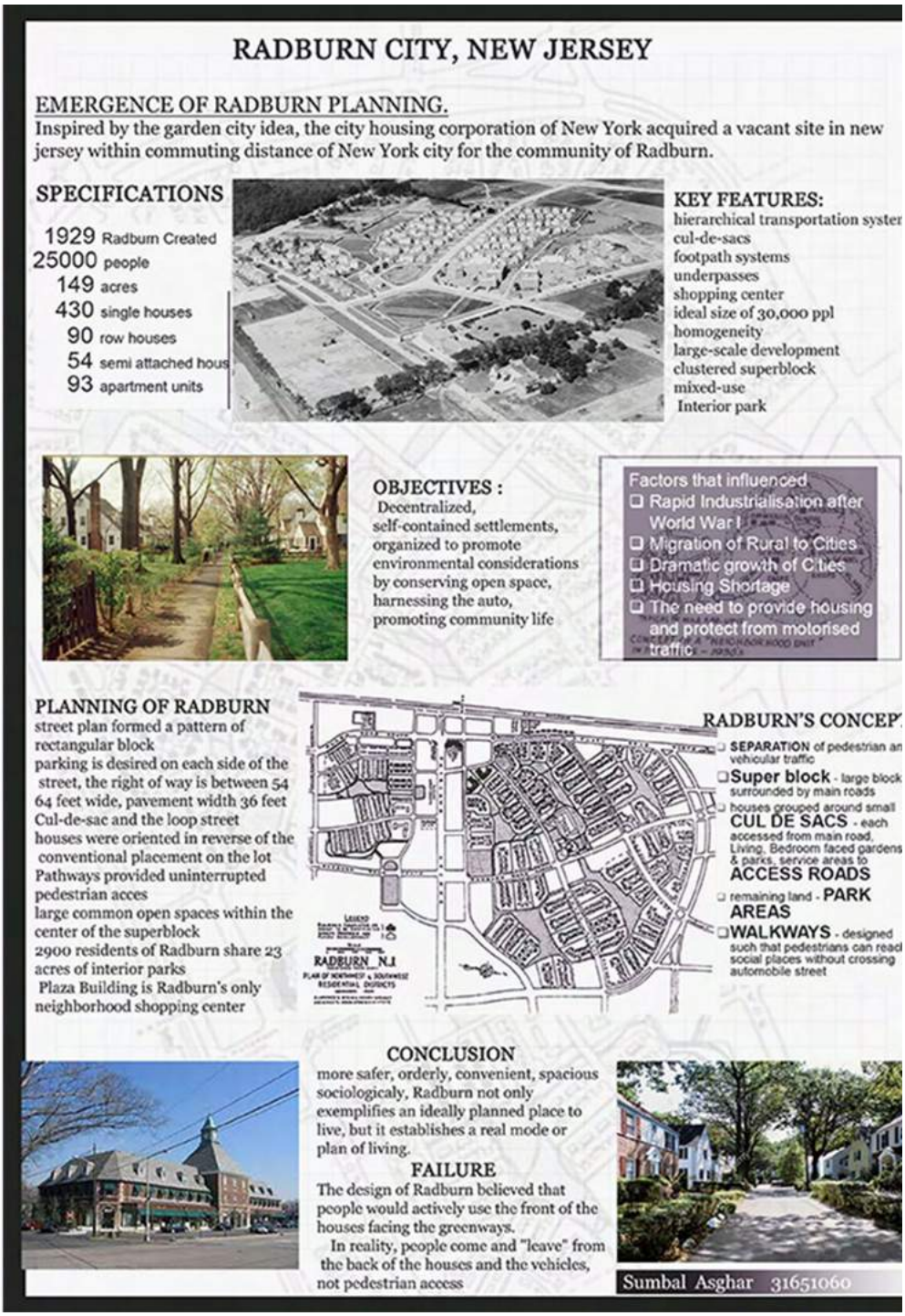
HOUSING SOCIETY



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SITE ANALYSIS

WAHDAT COLONY LAHORE WAS A DEVELOPED IN 1970'S ON 2403 KANAL OF GOVERNMENT LAND.

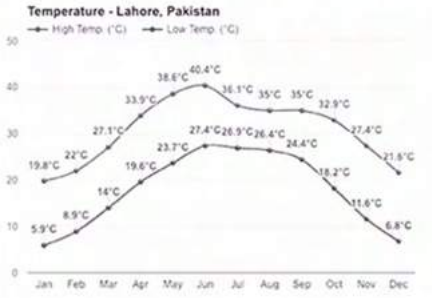
THE DEVELOPMENT PROVIDES HOUSING TO APPROXIMATELY 1800 FAMILIES OF GOVERNMENT EMPLOYESS OF SCALE 17 AND BELOW.

MOST OF THE HOUSES ARE SINGLE STORY .

WAHDAT COLONY IS A LOW DENSITY RESIDENTIAL AREA THAT LACKS MODERN AMENITIES ,WHICH ARE NECESSARY FOR MODERN LIFSTYLE.

LOCATION:

WAHDAT COLONY LAHORE, PAKISTAN



URBAN CONTEXT

- ☒ RESIDENCIAL COMMUNITIES (clifton colony, combo colony, new garden town ,rehmanpura)
- ☒ COMMERCIAL HUB
- ☒ HOSPITAL (fatima memorial , anmol)
- ☒ PUNJAB UNIVERSITY , UNIQE SCHOOL, UNIQE COLLEGE,
- ☒ GHAZALI PARK, ALI PARK

Total site area

- ☒ Site Dimension 4580' * 3215'
- ☒ Total Site Area 300 acre
- ☒ Total Site Area 2403 kanal
- ☒ Total Site Area 10,836,000 sqft

Utilities

- ☒ Infrastructure
- ☒ Electricity
- ☒ Water supply
- ☒ Gas supply

JURISDICTION

OWNER LEGAL: Govt of Pakistan Lahore development Area.

SITE ACCESSIBILITY

THE SITE IS ACCESS BY:

PADISTRIAN

PRIVATE VEHICALES

PUBLIC TRASPORT ONLY ACCESSED AT WAHADAT ROAI

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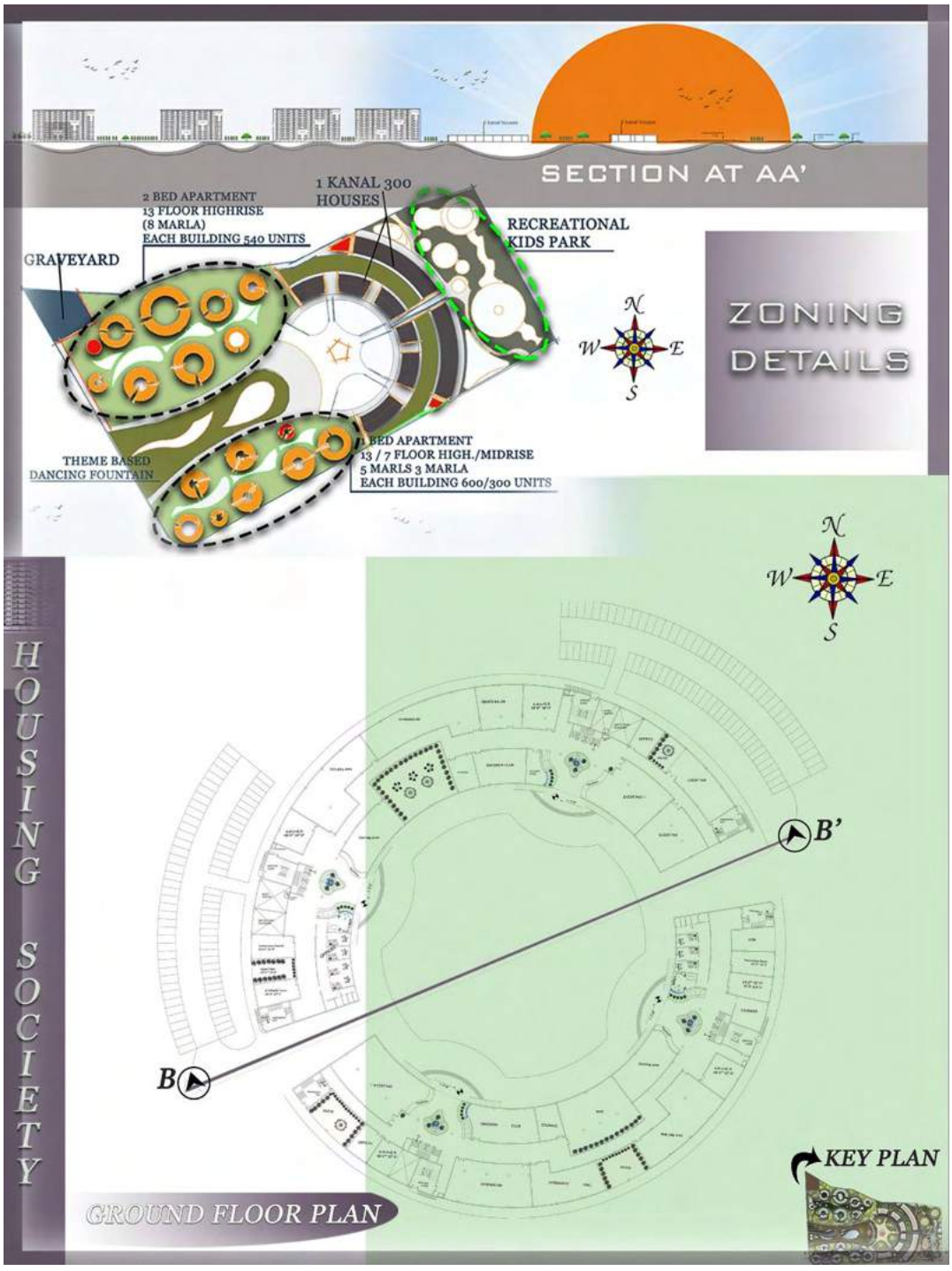

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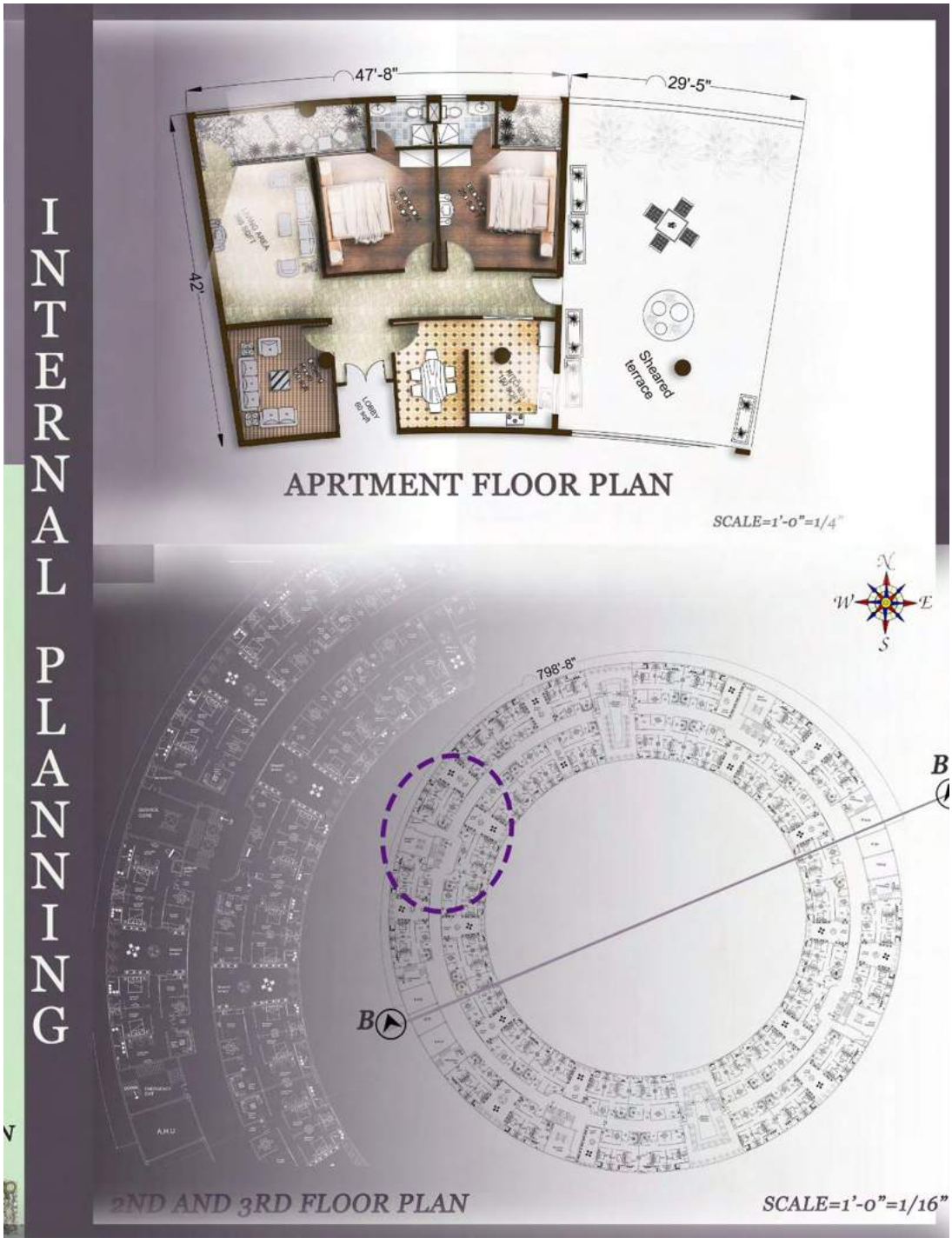

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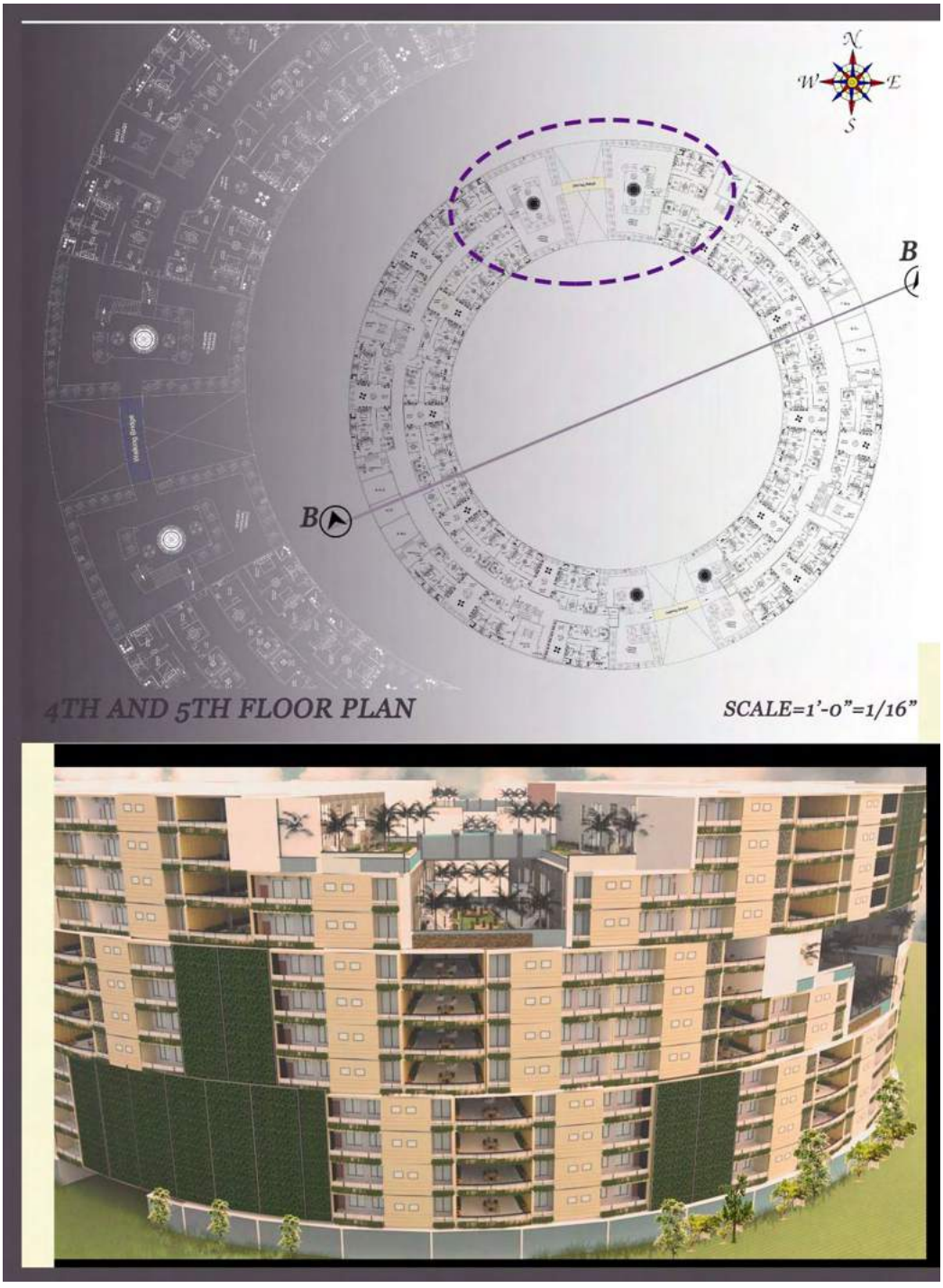

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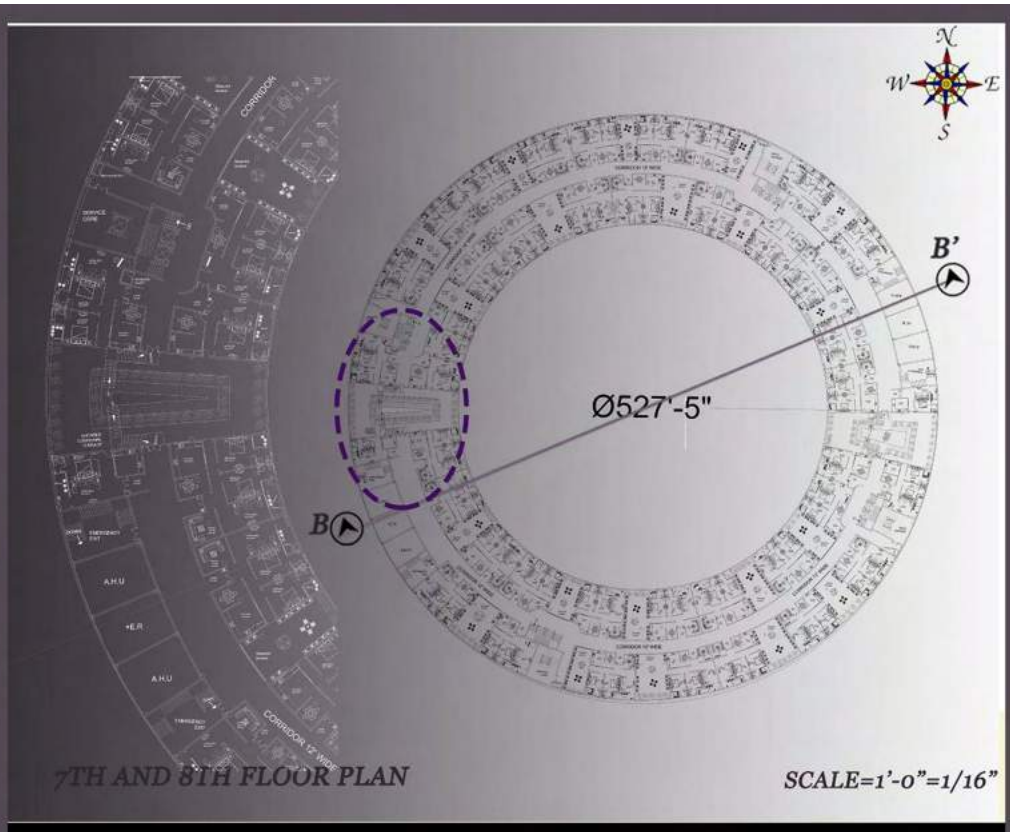
INTERNAL PLANNING



3D VIEWS

PLANNNING & RE DEVELOPMENT HOUSING COLONY OF GOVERNMENT OFFICERS WAHDAT COLONY LAHORE

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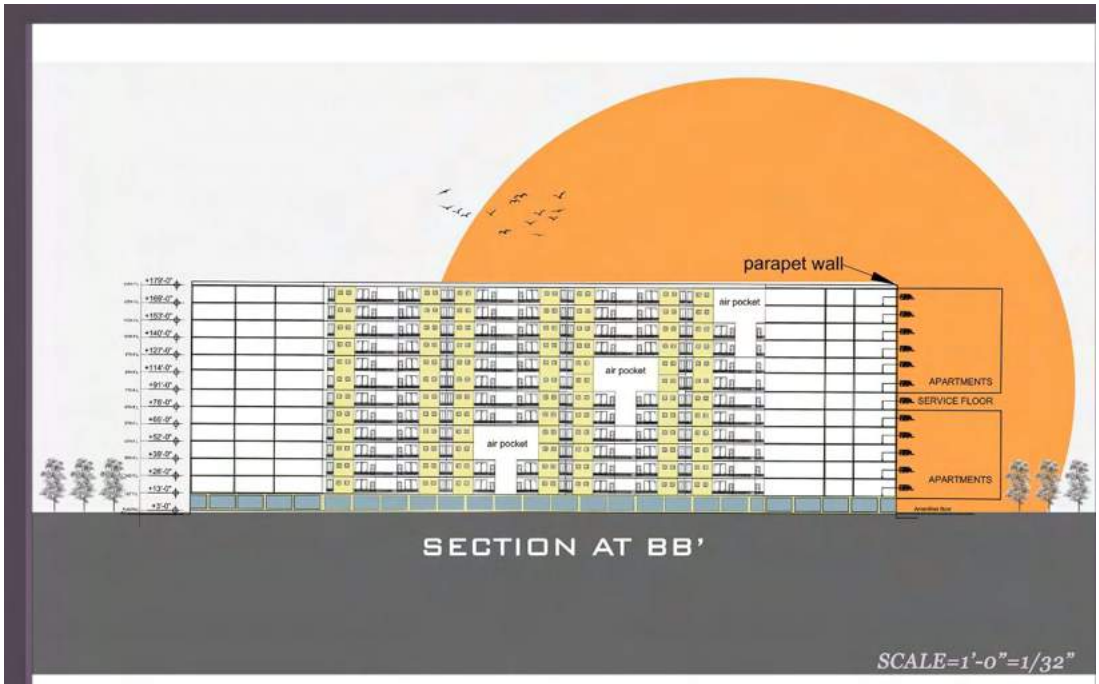

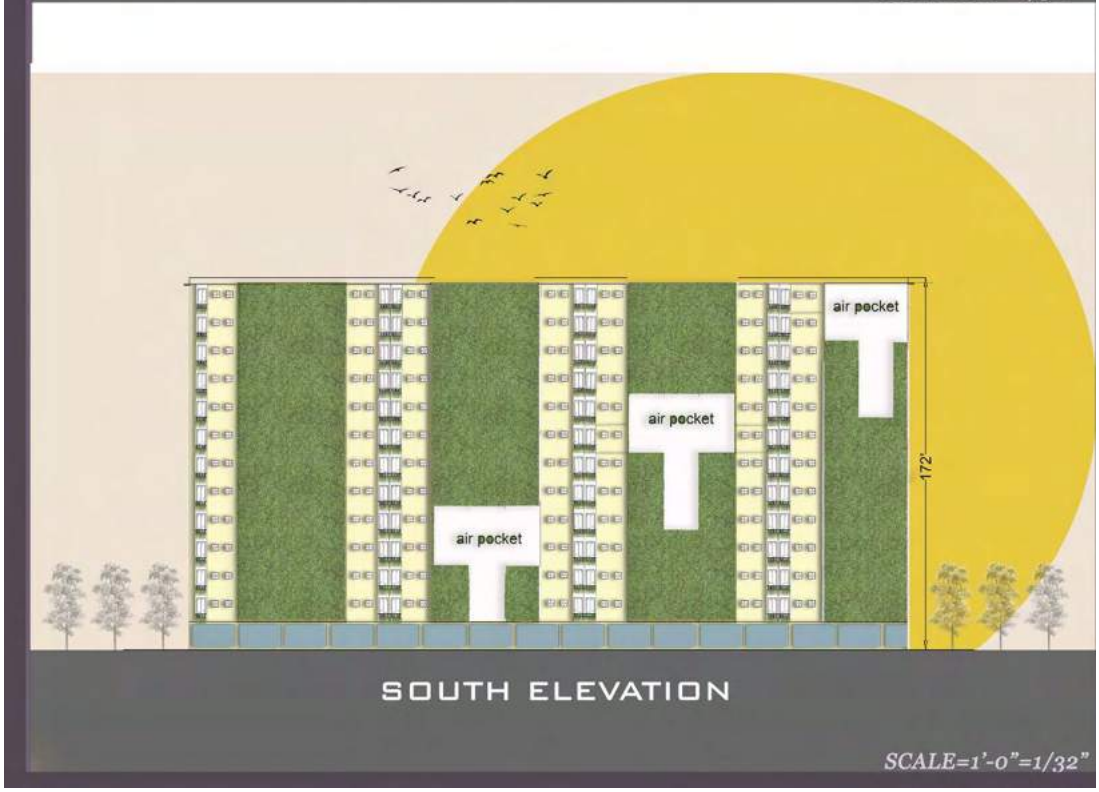

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HOUSING SOCIETY

ISOMETRIC VIEW OF AIR POCKETS

ISOMETRIC VIEW OF AIR POCKETS

PLANNNING & RE DEVELOPMENT HOUSING COLONY OF GOVERNMENT OFFICERS WAHDAT COLONY LAHORE

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Architectural Studio VI

SEMESTER VI

SESSION 2017- 2022

DEPARTMENT OF ARCHITECTURE

LAHORE COLLEGE FOR WOMEN, UNIVERISTY, LAHORE

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COURSE INTRODUCTION

COURSE CONTENTS:

The studio course is delivered through a combination of inspirational lectures and hands on individual project based discussions to refine the assigned design projects. In addition to talks on intelligent energy-efficient buildings and their services, students will be introduced to structural, electrical and public health design along with fire escapes, placement of central vertical movement core and types of lifts in public buildings, as knowledge of execution is also at par with design in any project. Significance of participatory roles in professional practice as architects for coordination in a project is also indicated in this course.

COURSE SYNOPSIS:

Architectural Design Studio –VI is furnished as a course to provide relevant learning forums for students to put theoretical concepts of the curriculum into practice. This course introduces students to complex, creative, exploratory and advanced design problems that remains their focus throughout the semester. Projects vary but often address and involve the integration of space, form, structure, function and materials. Relativity of humans as occupants in relationship to program and function are considered in detail. Such studio projects are expected to be comprehensive in their development and execution. Students are often given particular requirements to incorporate into their scenario, such as sustainability requirements or occupation restrictions.

COURSE INTRODUCTION

COURSE LEARNING OUTCOMES:

The main objective of this Studio course is to enhance the conceptual design development in the Students about mid-rise structures and their multipurpose use in the specified context. Role of weather, locality, social life of the people, available resources, orientation, noise level in the given area, horizontal and vertical cues of the site and available building materials while designing the given building. After successful completion of the projects, students would be able to; Comprehend the contextual site analysis, conceptually develop and implement the design, generate the form with respect to function of the building. They will be able to chalk out the building requirements and services, with respect to orientation of the site. Moreover the understanding of horizontal and vertical circulation systems within the high rise structure, will be heightened in manual as well as software based presentations.

GRADING POLICY:

TERM CLASS ASSESMENT 30 %				**FINAL TERM EVALUATION 70%**				**TOTAL**
TEST 1		TEST 2		FINALS			ATTENDANCE	
Marks 15		Marks 15		Marks 65			Marks 05	100
Class Discussion	Test	Class Discussion	Test	Final Project	Jury	Viva		
Marks 05	Marks 10	Marks 05	Marks 10	40	25	-		

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COURSE INSTRUCTOR

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AR. KHIZRA SHAHZAD	Khizra.shahzad@lcwu.edu.pk

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PROJECT INTRODUCTION

Project # 1

Mixed Use Building

Mixed-use development includes a building or a substantial urban community which combine commercial, cultural and residential usage in a dense area. Creating mixed-use communities allow people to live, shop and work in the same locality offer numerous economic and social benefits.

PROJECT INTRODUCTION

Project # 2

4 Star+ Hotel

The role of the hotel industry stems from a long history and development in the field of hospitality provision. In many countries hotels have evolved as extensions of domestic hospitality; though typically they are more often larger establishments (particularly in developed countries) Industry groups in different countries may define a hotel in different ways.

A typical definition might be:

"A hotel is an establishment providing paid accommodation."

HIGH-RISE BUILDING

INTRODUCTION:

DESIGN CHALLENGES:

MATERIALS:

HISTORY:

MIXED-USE BUILDING:

SPACES CAN BE PROVIDED:

NEED FOR MIXED-USE HIGH RISE BUILDINGS:

EVOLUTION OF STRUCTURAL SYSTEM:

STRUCTURE SYSTEM:

EXAMPLES:

BENEFITS:

ADVANTAGES:

DISADVANTAGES:

LOCAL CASE STUDY: MALL OF LAHORE

INTERIOR:

SECURITY SYSTUM AND FIRE SYSTEM:

GENERATORS AND AHU UNIT:

WHY MALL OF LAHORE:

SOLAR SYSTEM AND HOT WATER SYSTEM:

CONCLUSION

INTERNATIONAL CASE STUDY: SILODAM

CONCEPT:

PLAN:

ELEVATION:

ANOXEMETRIC:

SECTION:

SECTION:

SKETCH:

BRIEF:

FACADE:

INTERIOR:

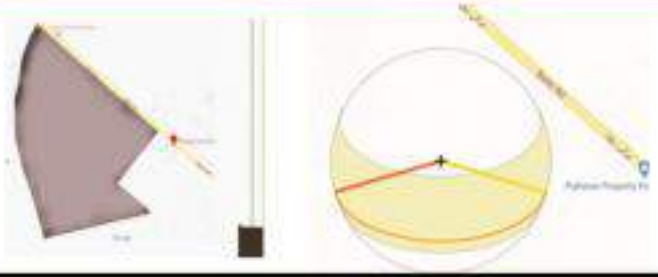
CONCLUSION

PROJECT: MIXED USE BUILDING HIGH RISE STRUCTURE

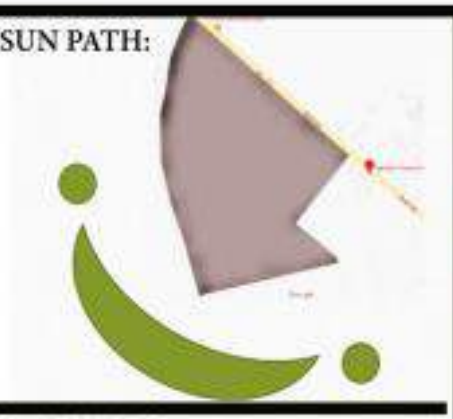
DEPARTMENT OF ARCHITECTURE

SITE ANALYSIS:

LOCATION: DHA PHASE SECTORS
PROVINCE: PUNJAB
LONGITUDE: 74.442869
LATITUDE: 31.528877
LEGAL JURISDICATION: DHA
AREA OF THE SITE: 909315 SQFT
SITE CONDITION:
FLAT SITE



SUN PATH:



NEAREST BUILDINGS:

INFORMATION TECHNOLOGY UNIVERSITY
SCIL SCHOOL
LAHORE SCHOOL OF ECONOMICS



SURROUNDING THE SITTE

ALLAMA IQBAL INTERNATIONAL ATRPOT 10 KM
PARAGON CITY 9KM
LUMS UNIVERSITY 14.9 KM
LAKE VIEW CITY 36 KM



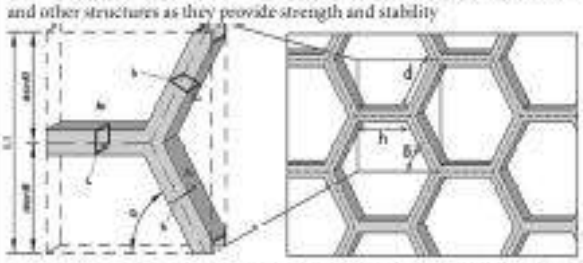

SITE VIEWS:



CONCEPT SHEET:

IN GEOMETRY:

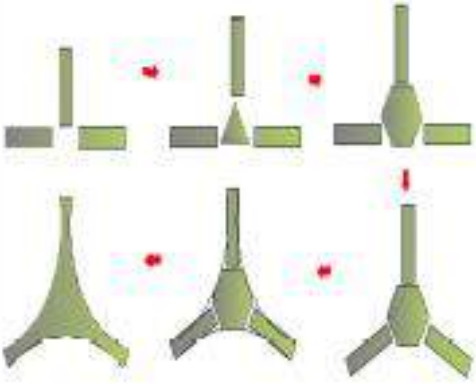
Triangles are the strongest shape. When a force is added to a triangle it is spread evenly through all three sides
Triangles are effective tools for architecture and are used in the design of building and other structures as they provide strength and stability



the modular, Y-shaped structure, with setbacks along each of its three wings provides an inherently stable configuration for the structure.
The Y-shaped plan is ideal for all building usage, with the wings allowing maximum outward views and inward natural light.

(e) tetra-U

CONCEPT DRAWINGS.



PROJECT: MIXED USE BUILDING HIGH RISE STRUCTURE

DEPARTMENT OF ARCHITECTURE

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PROJECT: MIXED USE BUILDING HIGH RISE STRUCTURE

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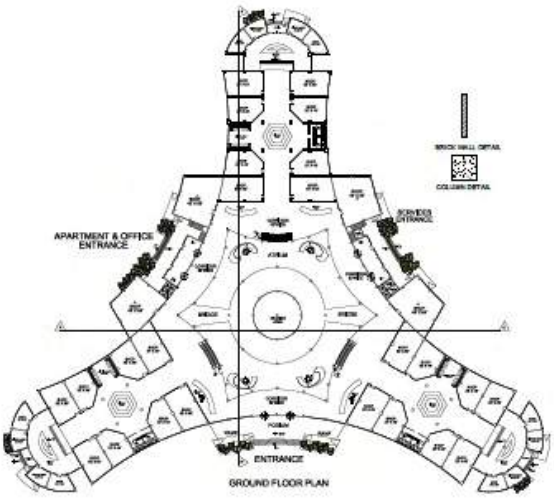

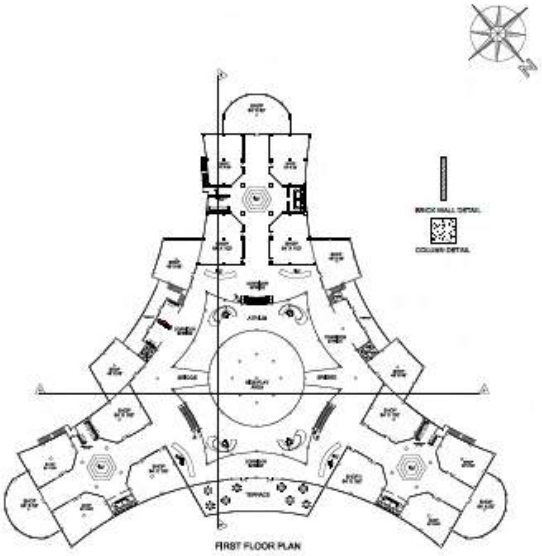

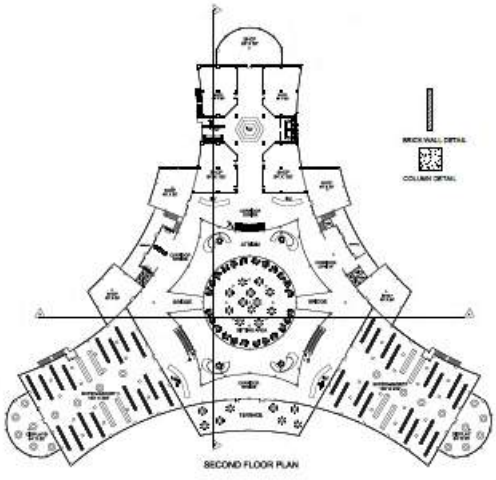

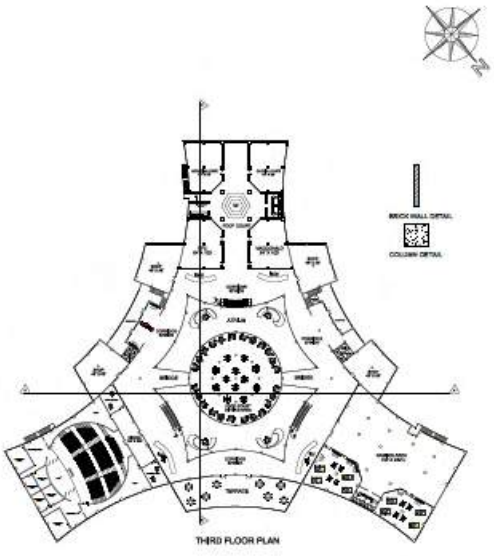

PROJECT: MIXED USE BUILDING HIGH RISE STRUCTURE

DEPARTMENT OF ARCHITECTURE

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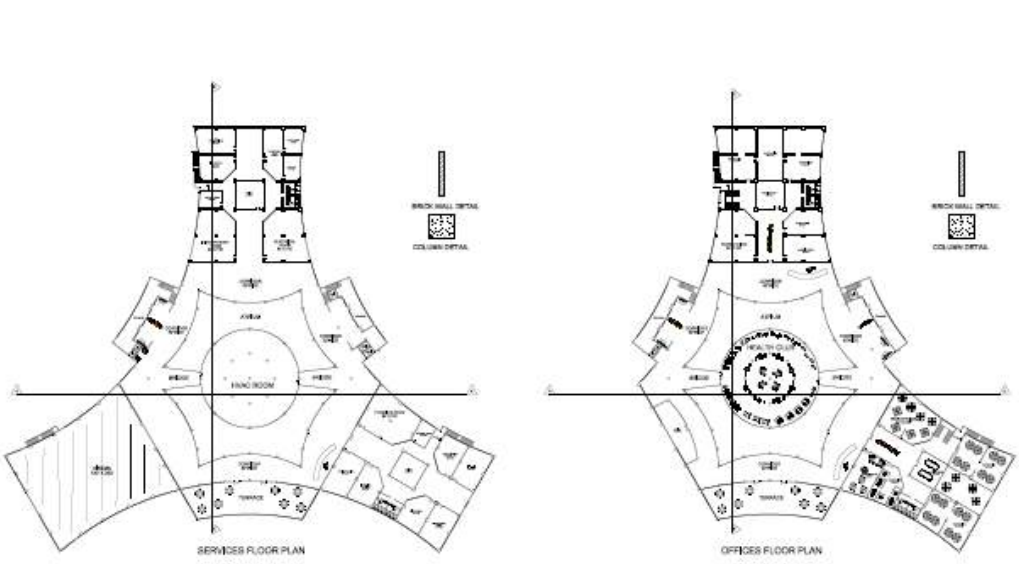
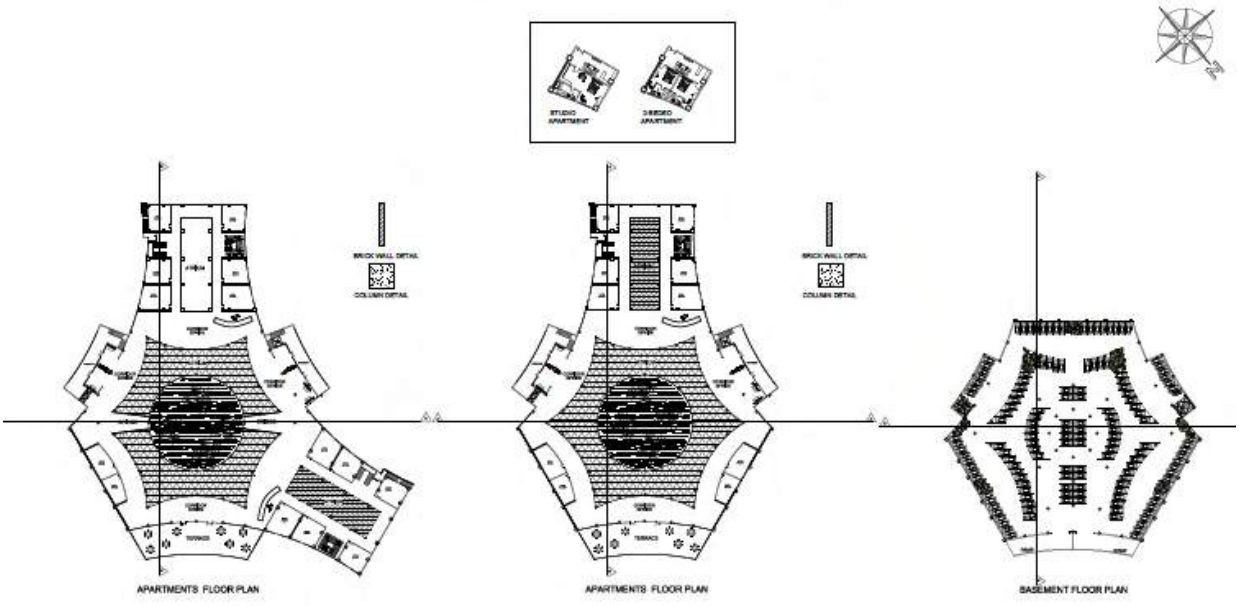
Jail Road, Lahore – Pakistan. Tel: 042-9203801-09 Fax: 042-9203077





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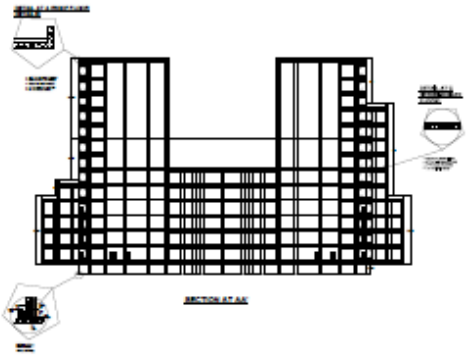

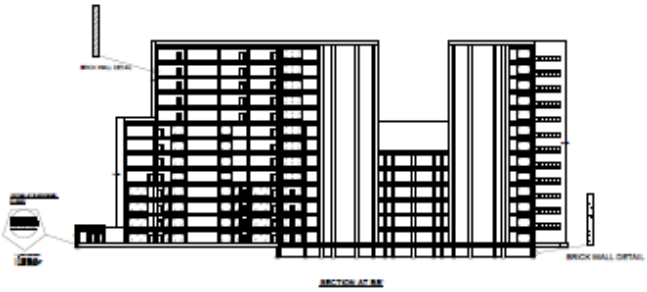

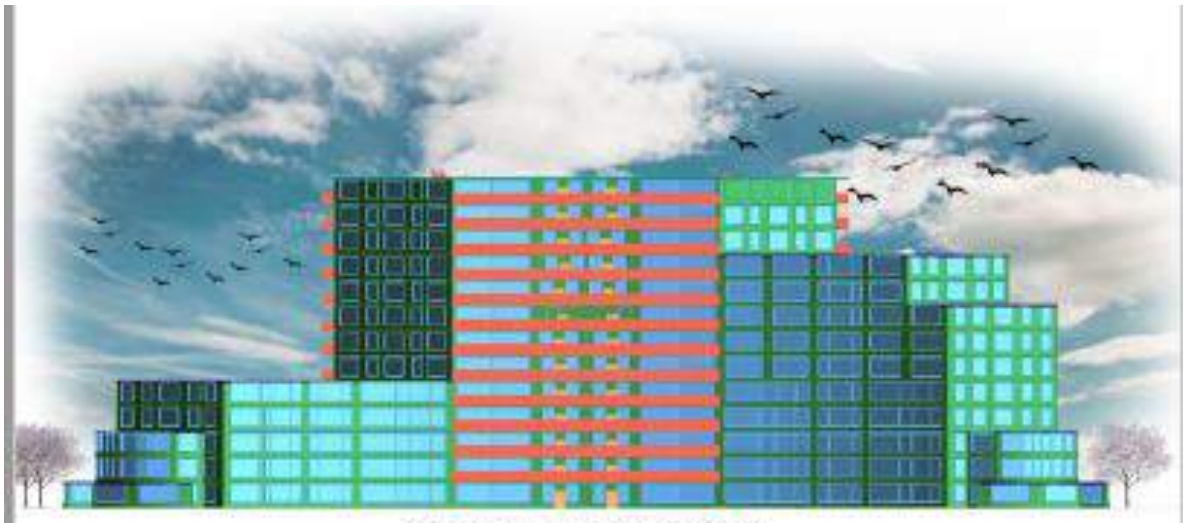

SOUTH WEST ELEVATION

NORTH EAST ELEVATION

PROJECT: MIXED USE BUILDING HIGH RISE STRUCTURE

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NORTH WEST ELEVATION

BIRD EYE VIEW

PROJECT: MIXED USE BUILDING HIGH RISE STRUCTURE

DEPARTMENT OF ARCHITECTURE

PROJECT HOTEL

INTRODUCTION

A HOTEL IS AN ESTABLISHMENT THAT PROVIDES PAID LODGING ON A SHORT-TERM BASIS.HOTEL IS LARGER THAN A MOTEL

CLASSCIFICATION

1.BY THE SIZE OF ROOM
:UNDER 200 ROOMS
:200-399 ROOMS
:400-700 ROOMS
:MORE THAN 700 ROOMS

2.TARGET MARKET
:URBAN HOTEL
:SUBURBAN HOTEL
:MULTI-BRANDED HOTEL
:MIXED-USE HOTEL
:RESORT HOTEL
:CASINO HOTEL
:CONVENTION HOTEL
:CONFERENCE CENTERS

3.LEVEL OF SERVICES
:WORLD CLASS SERVICE (LUXURY 5 STAR)
:MID-RANG SERVICE (3-4 STAR HOTEL)
:LIMITED SERVICE (1-2 STAR)

4. OWNER SHIP/ AFFILIATION
:INDEPENDENT / SINGLE OWNER
:CHAIN HOTEL

RANKING

1 STAR HOTEL
:OFFER ESSNTIALS
:HYGIENE/SECURITY
:FUNCTIONED BATH
:SELFSERVICE/VENDINGS

2 STAR HOTEL
:2-4 STORIES HIGH
:AFFORDABLE ATTRECTION
:CONVENIENT TRANSPORT
:FURNISHED CLEAN/ BASIC

3 STAR HOTEL
:AVERAGE QUILITYSERVICE
:CLEAN DESIGN RECEPTION
:SERVES SNACK BAR
:NOT DINNING

4 STAR HOTEL
:DULEX SERVICE
:LAGER FACILLITIES
:HIGH QUAILITY DESIGN
:SERVICE TO PLEASING

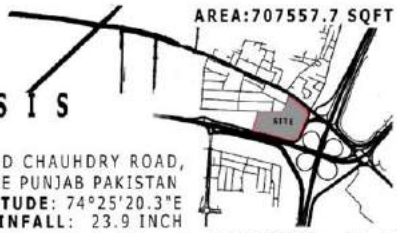
5 STAR HOTEL
:FULLY DESIGNED
:EXPENSIVE FACILITIES
:EXPERIENCE VIEWS
:FOR WEALTHY PEOPLE

7 STAR HOTEL
:MORE LUXURIOUS
:MORE LUXURIOUS
:MORE LUXURIOUS
:MORE LUXURIOUS

REQUIRMENTS

-LOBBY
-SEATING
-RETAIL AREA
-FUNCTION SPACES
-RECREATION SPACES
-BACK OF YHE HOUSE
-RECEPTION
-CIRCULATION
-GUEST ROOMS
-

SITE ANALYSIS



MACRO LEVEL

LOCATION GULDASHT TOWN,AMJAD CHAUHDRY ROAD,
CITY/PROVINCE/COUNTRY:LAHORE PUNJAB PAKISTAN
LATITUDE: 31°32'27.5"N / **LONGITUDE**: 74°25'20.3"E
ALTITUDE: (709 FT) **ANNUAL RAINFALL**: 23.9 INCH
AVERAGE TEMP: SUMMMERS: 33.9 °C / WINTERS: 12.3
MINIMUM TEMP: -1°C **MAXIMUM TEMP**:50.33 °C

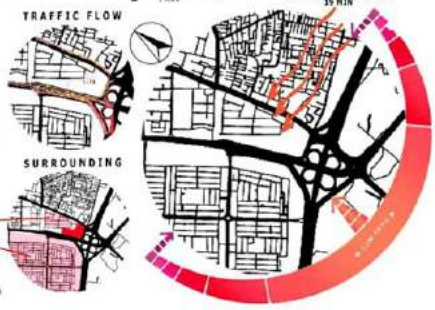
LAND MARKS

MESSO LEVEL

LEGAL JUNCTION: DHA LAHORE
FEATURE: GREEN AREA AT NORTH
TOPOGRAPHY: FLAT/NO CONTOURS
SOIL CAPACITY:0.5TSF TO 1.25 TSF

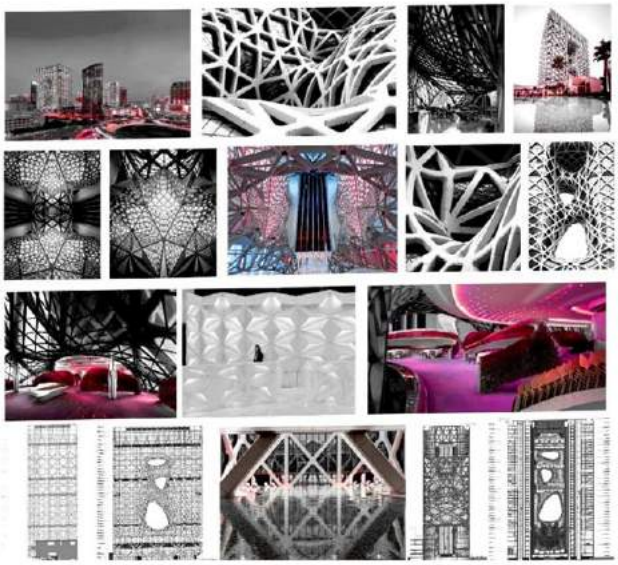
MICRO LEVEL

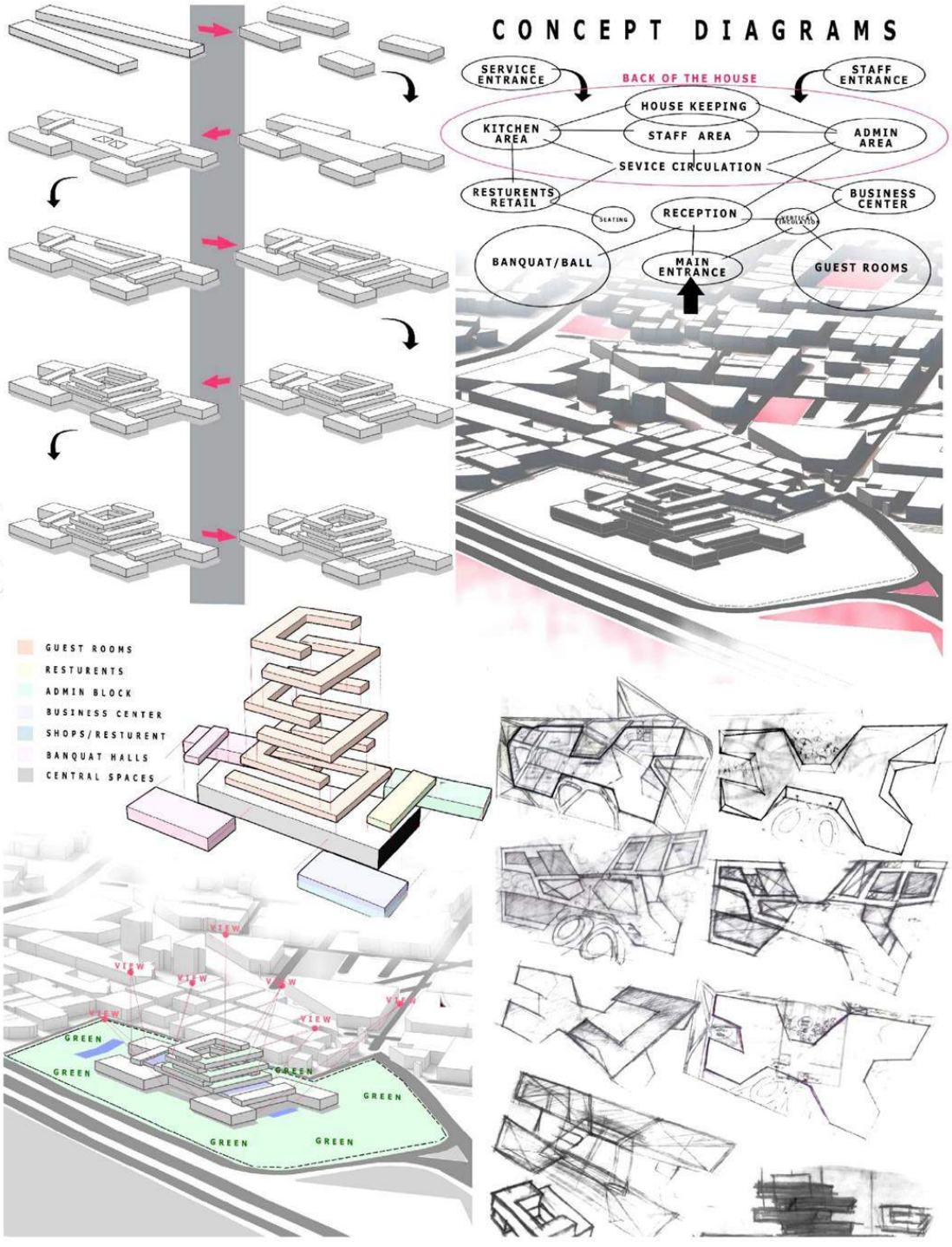
SURROUNDING:AT NORTH GULDASHT TOWN,HOUSES AT WEST-SOUTH ASKARI-X AT SOUTH MAIN RING-ROAD AT EAST RESIDENTIAL AREA



Morpheus Hotel (CASE STUDY)

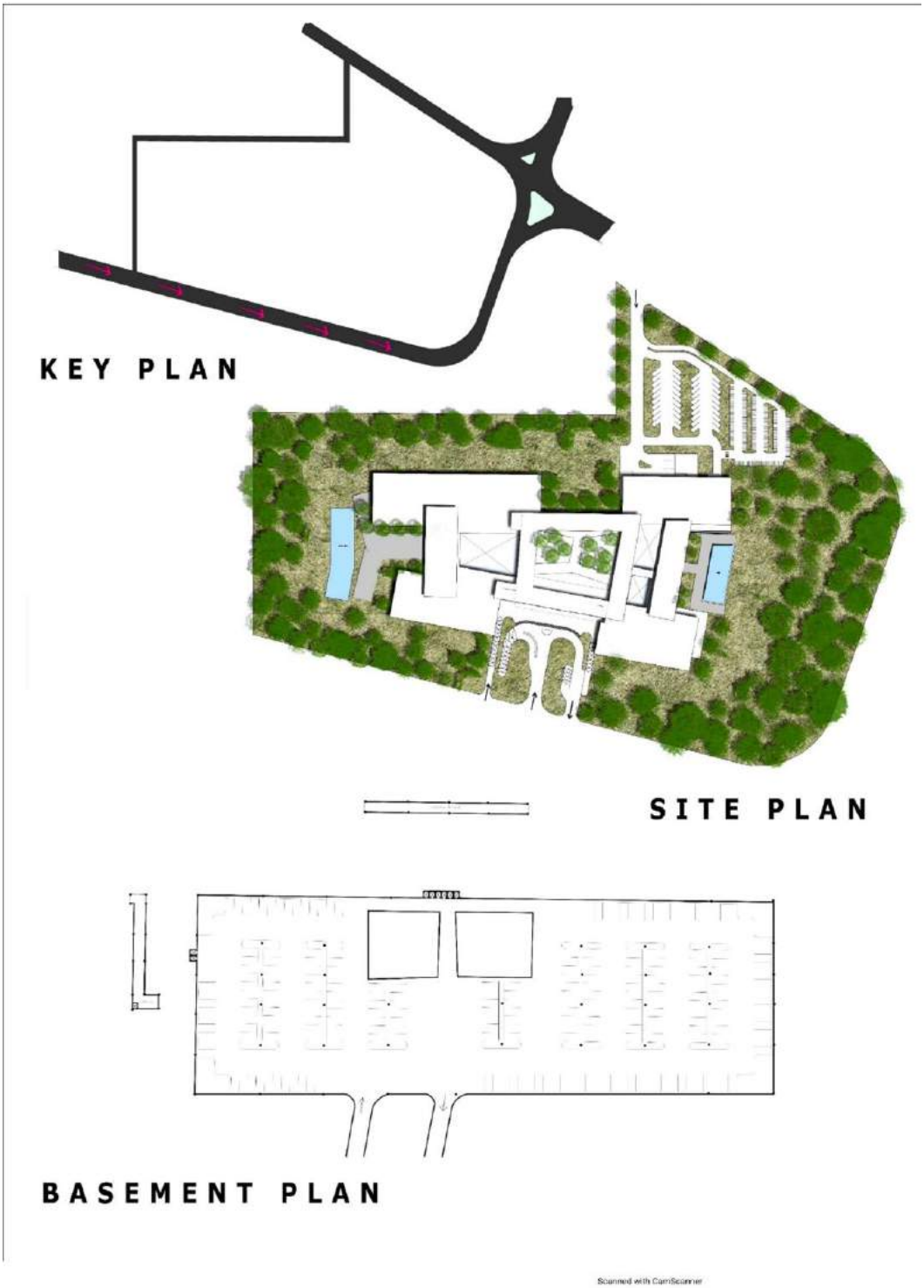
LOCATION:MACAOESTR MORPHEUS,CITY OF DREAM
ARCHITECT ZAHA HADID ARCHITECT
AREA 147860.0 M2
AREA 2018





PROJECT: 4 STAR + HOTEL

DEPARTMENT OF ARCHITECTURE



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DEPARTMENT OF ARCHITECTURE

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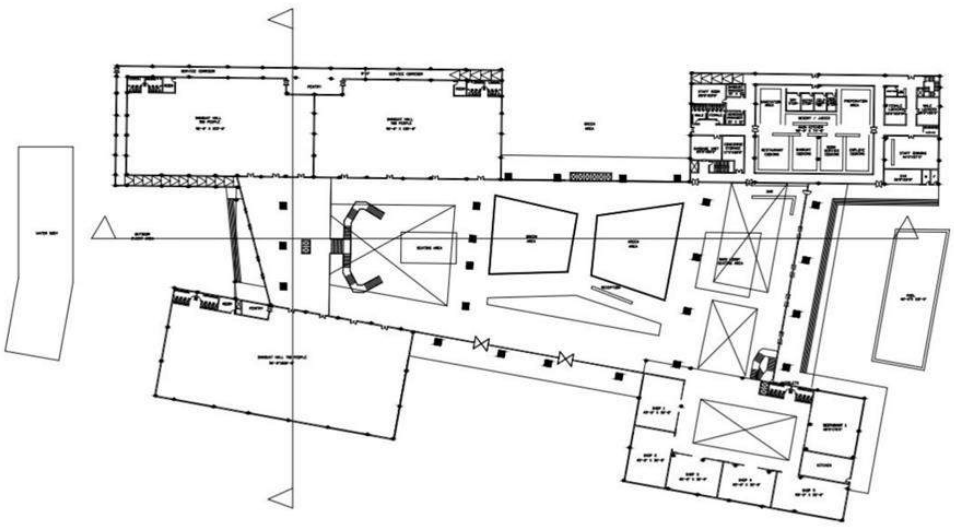
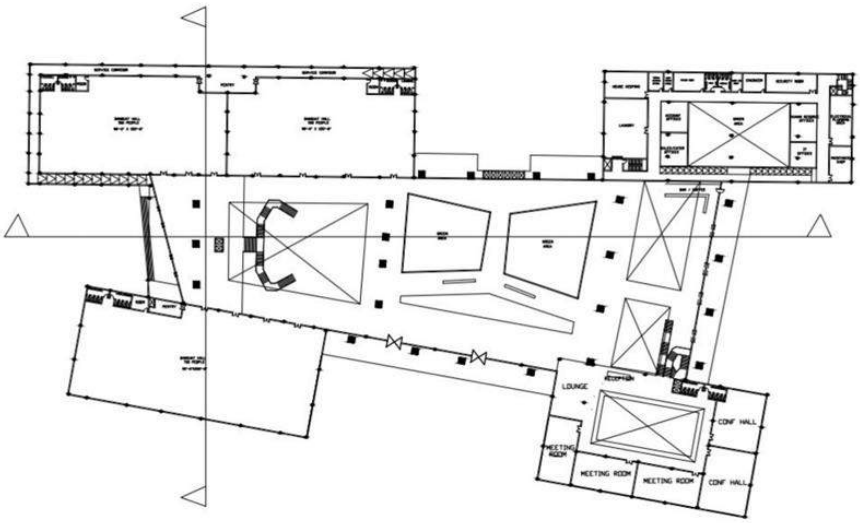


GROUND FLOOR PLAN



1ST FLOOR PLAN

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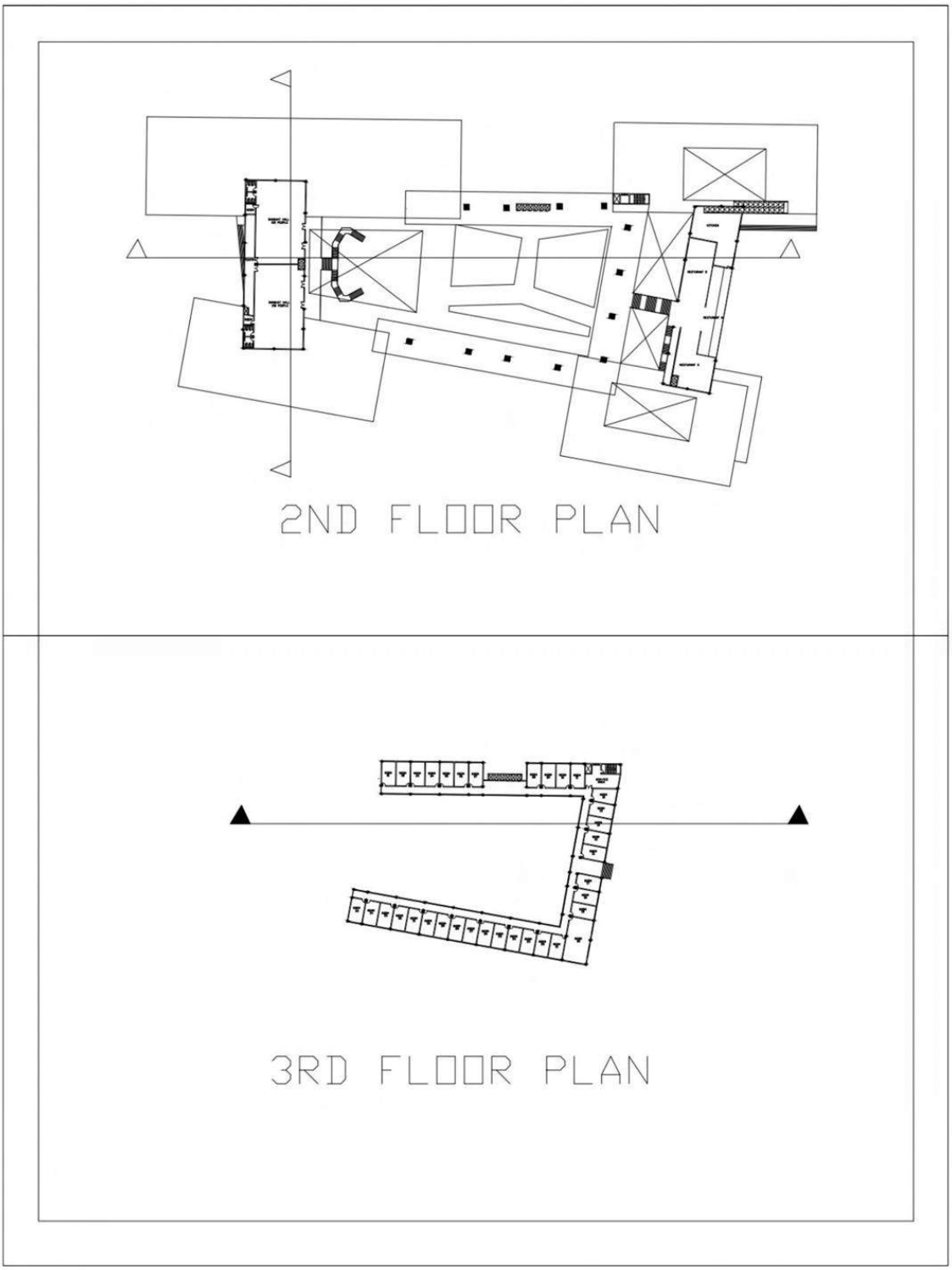
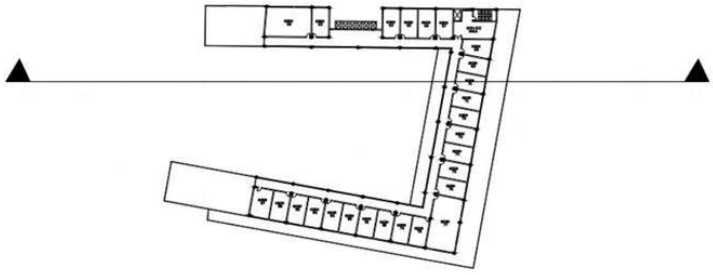
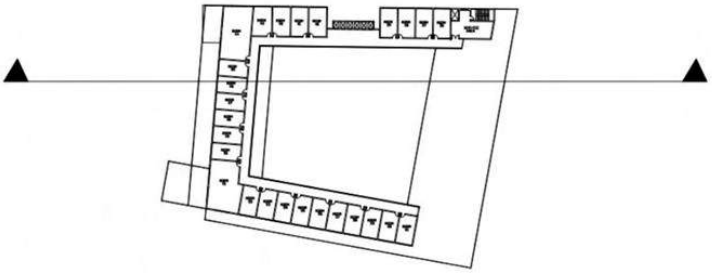


PROJECT: 4 STAR + HOTEL

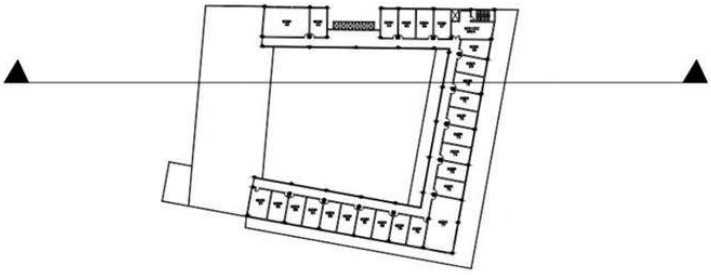
DEPARTMENT OF ARCHITECTURE



4TH FLOOR PLAN



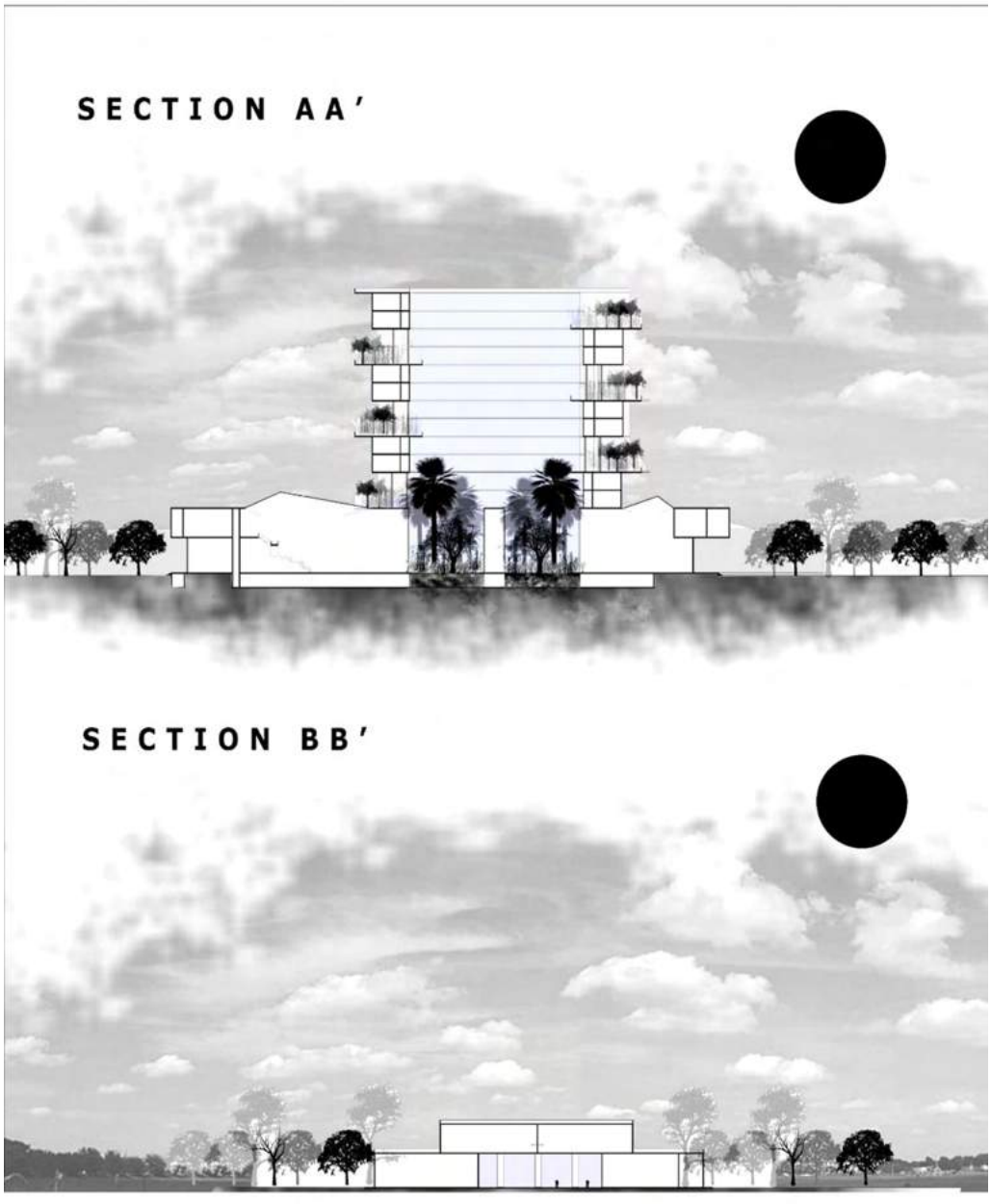
GUEST ROOM FLOOR PLAN



GUEST ROOM FLOOR PLAN

PROJECT: 4 STAR + HOTEL

DEPARTMENT OF ARCHITECTURE



PROJECT: 4 STAR + HOTEL

DEPARTMENT OF ARCHITECTURE

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PROJECT: 4 STAR + HOTEL

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SDG 11

Sustainable Development Goals

11.4.8

DEPARTMENT OF ARCHITECTURE

LAHORE COLLEGE FOR WOMEN, UNIVERISTY, LAHORE

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Arch-453 Sustainable Architecture -I

SEMESTER-VIII

SESSION 2016- 2021

DEPARTMENT OF ARCHITECTURE

COURSE INTRODUCTION

COURSE CONTENTS:

The course requires the practice to be categorized into two sections: The theoretical portion for comprehensive learning and the practical application of the studied material into projects or practical assignments. The course is designed to focus on the understanding of sustainability, its three main areas i.e. social, economic and environmental concerns , highlighting the issues in the way of sustainable design globally and with reference of Pakistan, and various passive design strategies through which the purpose of sustainable environments may be fulfilled. Thus, the course will investigate the on-going sustainable problems, climate change, behavioural change, sustainable values, and the role of passive design elements in these parameters.

COURSE SYNOPSIS:

This course is to familiarize the students with global problems emerging from the overall climate change, the steps or strategies that can at least create some resistance to the impacts of increased carbon footprints of the built spaces, the role of passive design strategies that needs to be considered while designing any building and the steps that can be taken to improve the Indoor Air Quality (IAQ) of the already built structures. The hybrid of both active and passive designs, their needs and the challenges in designing a building is a critical portion of the course. The other important systems in the course, for achieving the sustainable environment are Rain Water Harvesting and Waste management systems.

COURSE INTRODUCTION

COURSE LEARNING OUTCOMES

1. The main objective is to enable students to the realization of human beings about the impacts of lifestyle and architectural styles on the natural environments and why this subject needs urgent attention of field experts and policy makers. 2. The understanding of challenges in achieving the environmental, social and economic sustainability across the globe and within the country. 3. To develop the idea of root causes of the whole disturbance in the climate changes; the carbon emissions and the carbon footprints of the built structures in specific. 4. To make students capable to give the passive design techniques a thought while designing an academic project or infield practice. 5. The importance of building envelope in deciding the impacts of any building on environment in the next 100 years of its construction. 6. The detailed analysis of various design strategies; landscape, wall treatments, roof, openings: doors/windows, infiltration etc. and their effects on the indoor temperature and environments. 7. To create a better understanding of the dynamics of natural ventilation in the buildings, its considerations, impacts and role in maintaining an improved IAQ. 9. The hybrid technology of sustainability and the understanding its importance in comfortable indoors. 10. The analysis of various systems that can contribute in sustainability on a society level i.e. Rain Water Harvesting, Grey Water Reuse and Waste Reduction Management and its 3 R’s.

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COURSE INSTRUCTOR

Name	Email Id
AR. FAREENA SHAHID	architectfareena@gmail.com
AR. MAHNOOR ASIM	mahnoorasim88@gmail.com

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Jail Road, Lahore – Pakistan. Tel: 042-9203801-09 Fax: 042-9203077

PROJECT INTRODUCTION

Sustainable development has been in the forefront of debates because of the far reaching effect of climate change on this earth. This is principally due to the activities of industries that pollute the atmosphere and use up non-renewable resources to fuel our growth and development. As a consequence of this, it has become necessary for all major consumers of resources including the building industry to adopt sustainable development measures as a way of prudently using our scarce resources.

The project is to propose the Design Strategies and Solutions for the existing built structures of Lahore College for Women University. The focus would be on suggesting multiple design approaches so that the Indoor Air Quality (IAQ) of the built spaces is improved and the overall negative impact of these buildings on environment is minimized.

Students are required to analyze climate on both micro and macro levels and to have a detailed survey of the blocks given to have the idea about design limitations and challenges. Study and consultation of different Sustainable Design Books, so that they can have variety of related material and case studies to analyze, brainstorm and suggest different energy efficient design techniques, is highly recommended. The strategies regarding building envelope, landscaping, shading devices, Lighting analysis, building materials and active design systems will be incorporated.

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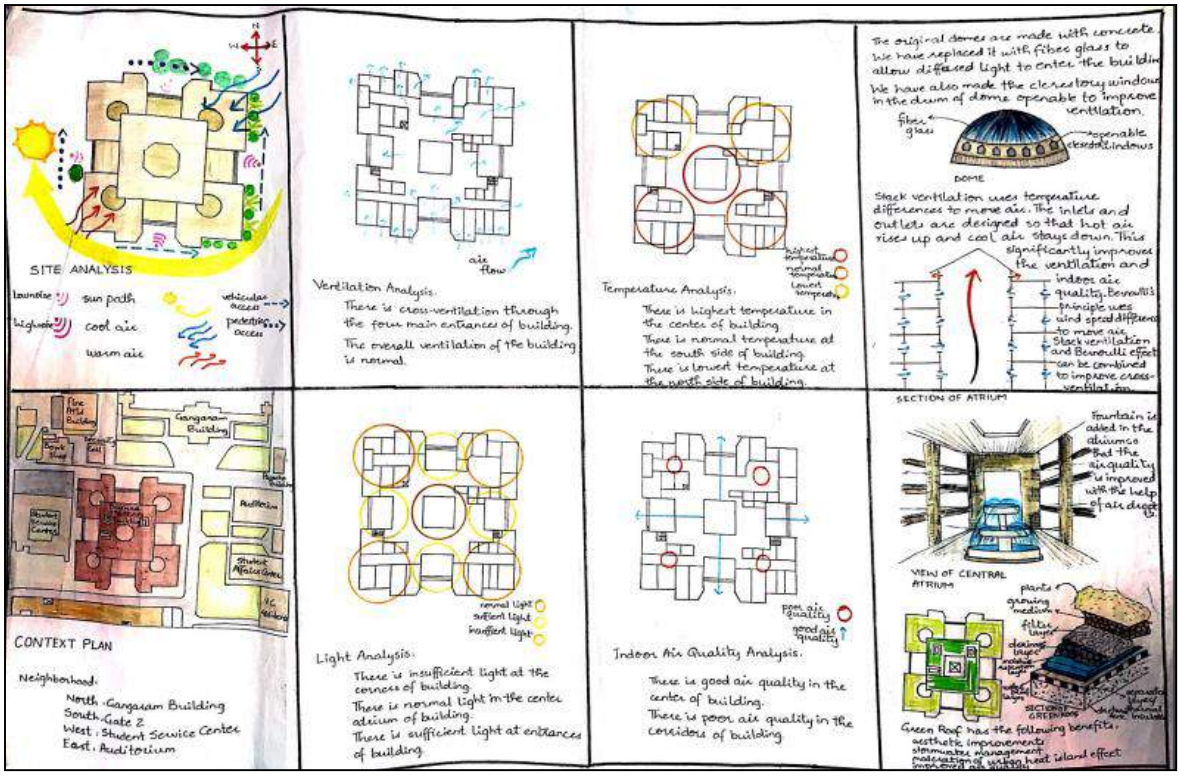

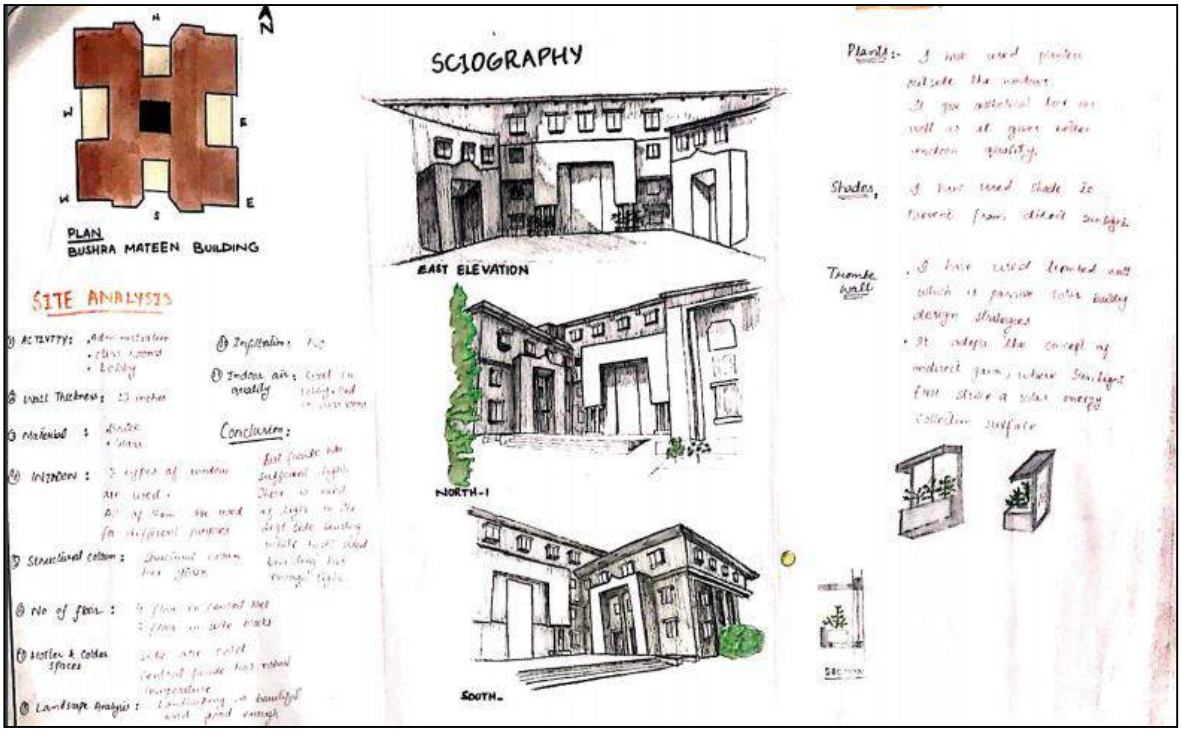

CRITICAL ANALYSIS W.R.T. SUSTAINABILITY – BUSHRA MATEEN BUILDING
LCWU, JAIL ROAD, LAHORE

DEPARTMENT OF ARCHITECTURE

Lahore College for Women University

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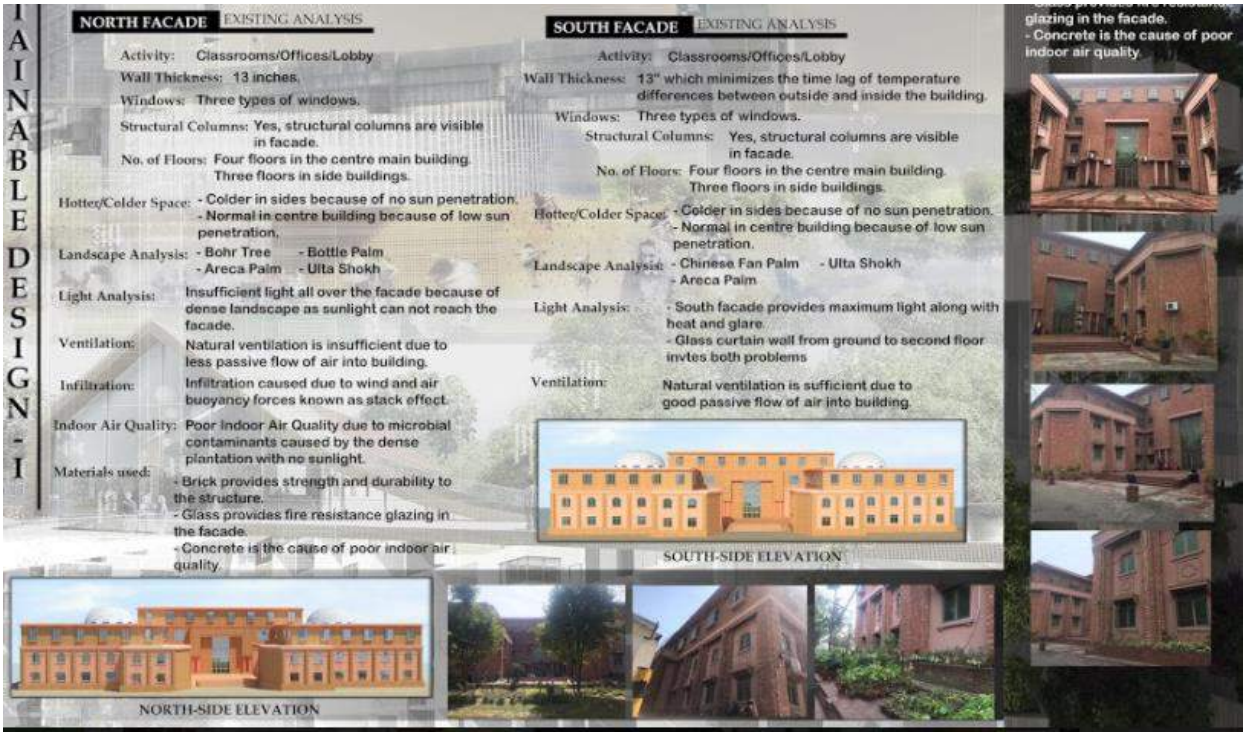

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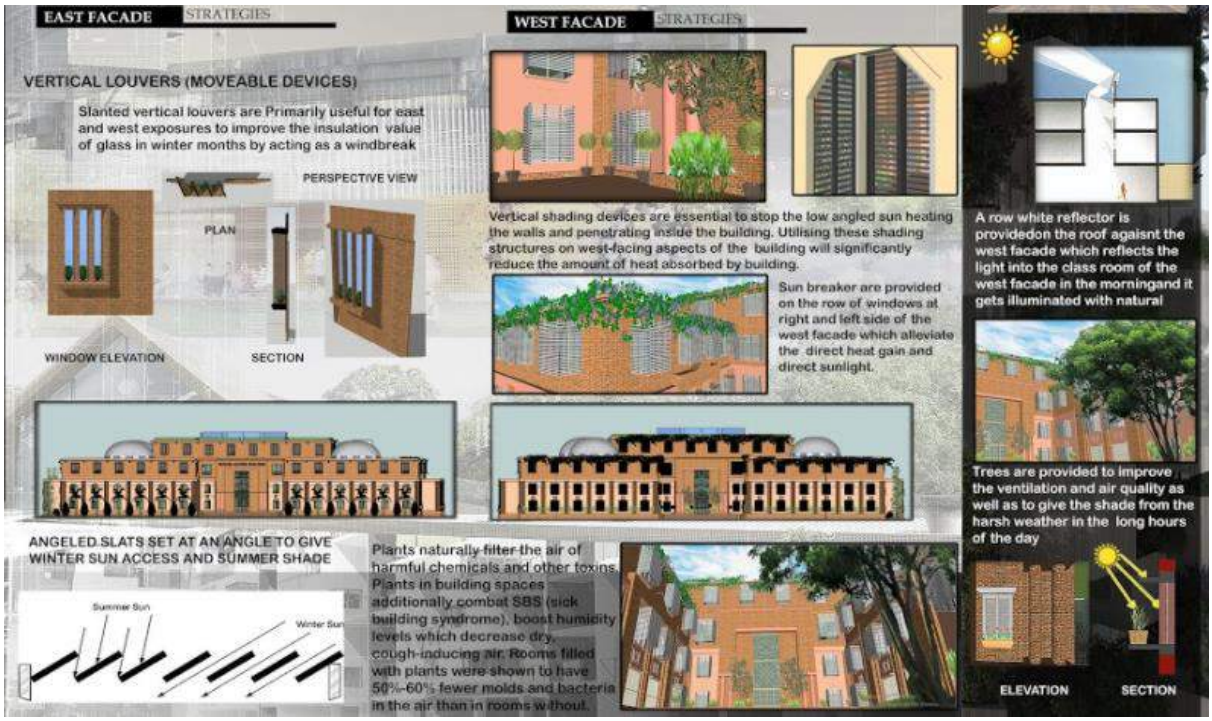

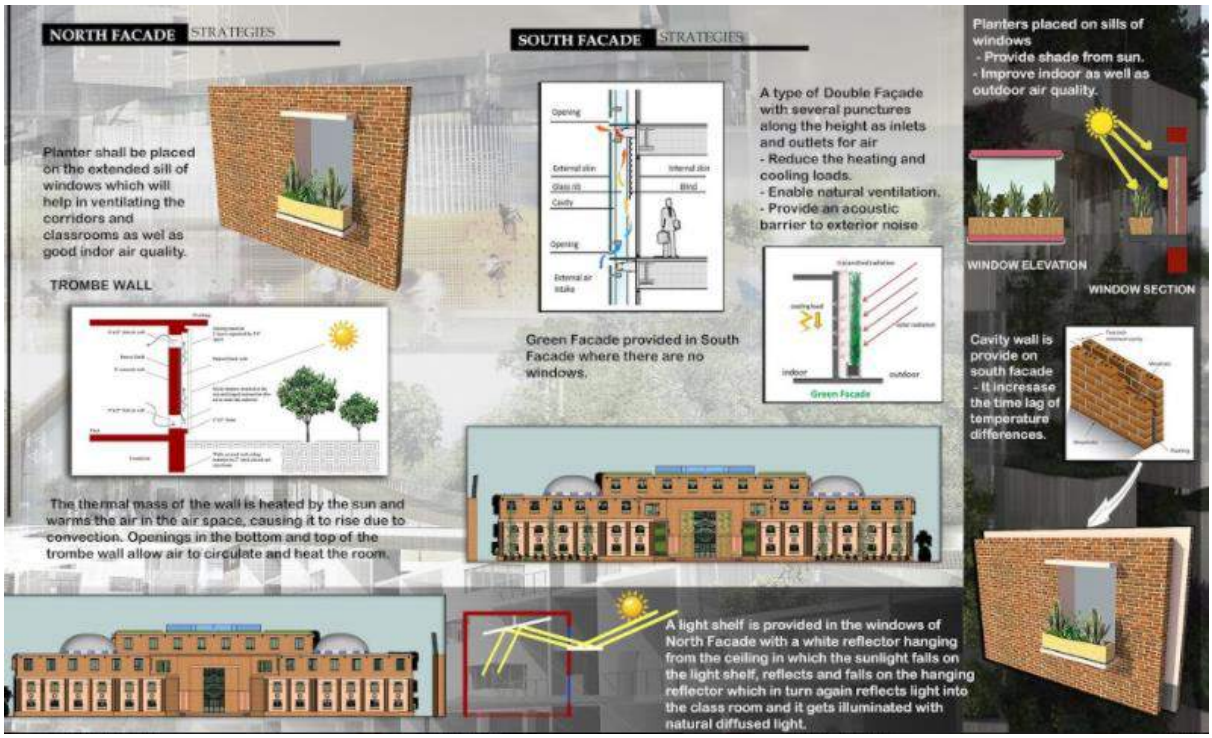

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LCWU, JAIL ROAD, LAHORE

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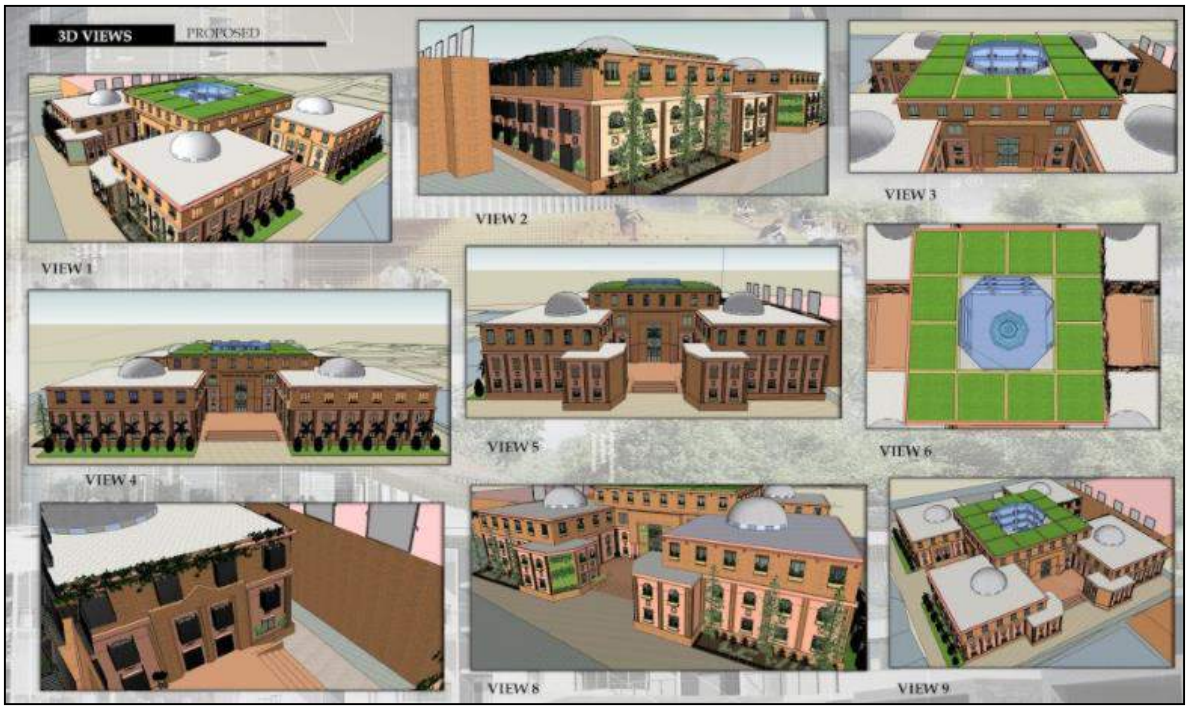
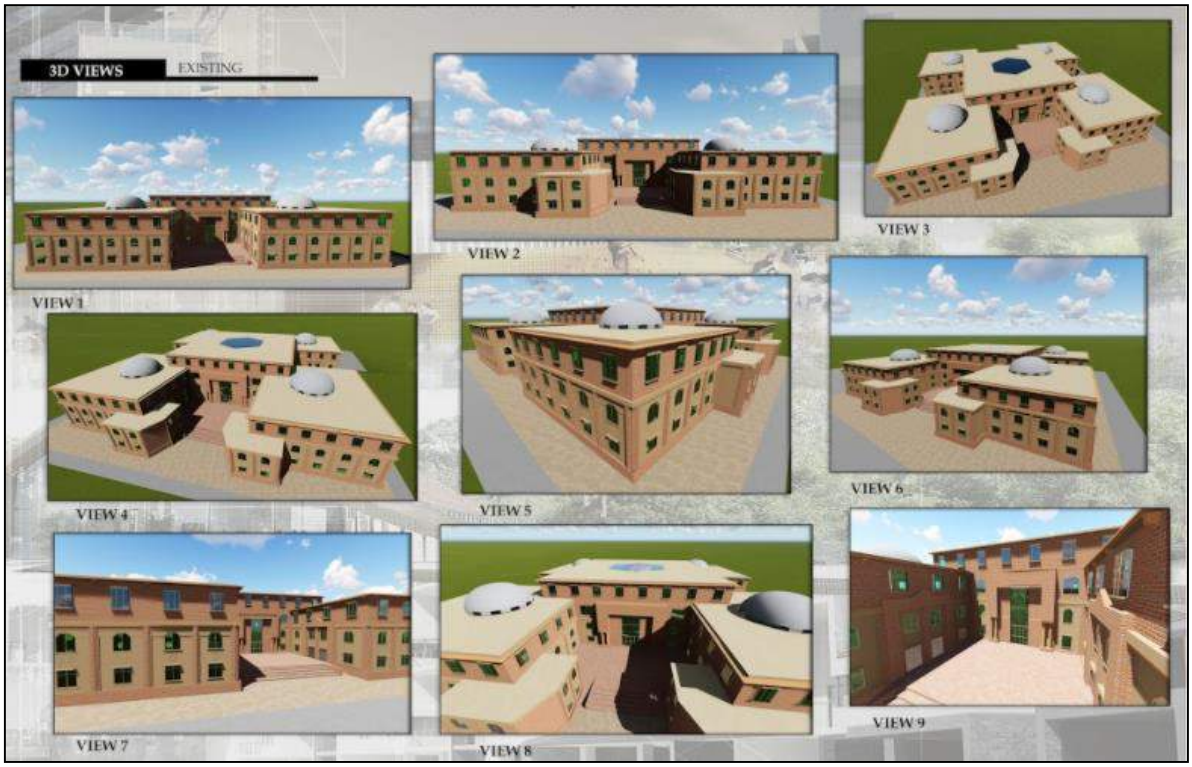
TOP CATEGORY STUDENT 01





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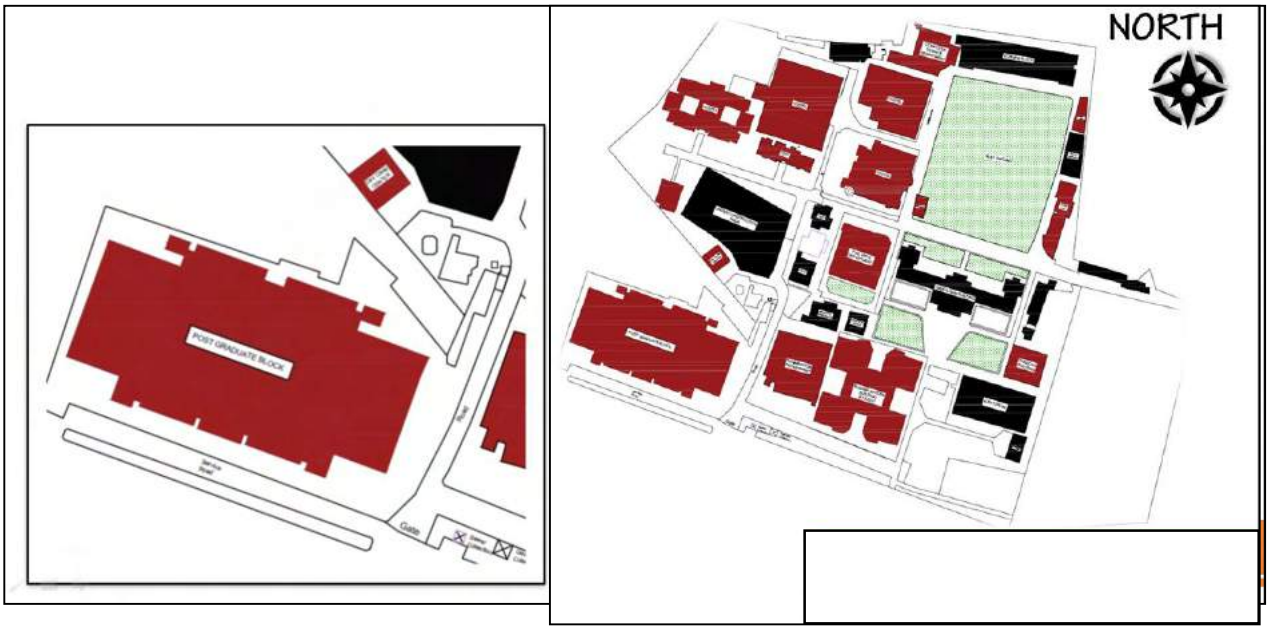

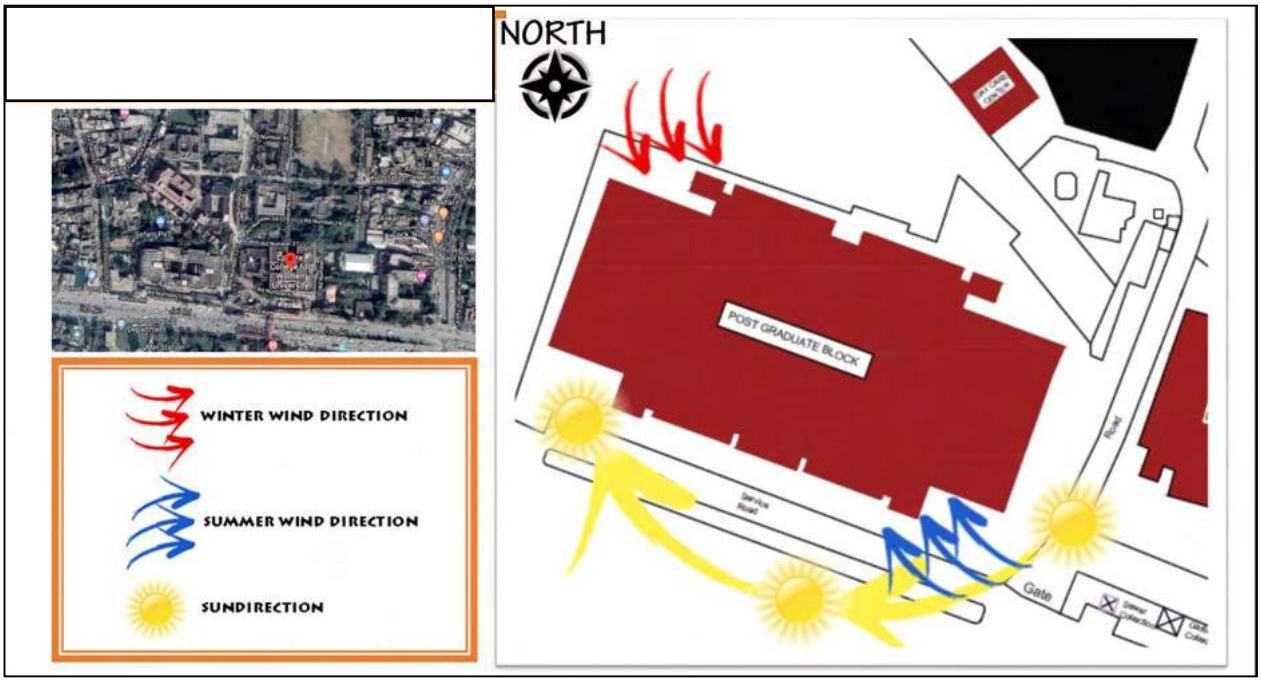

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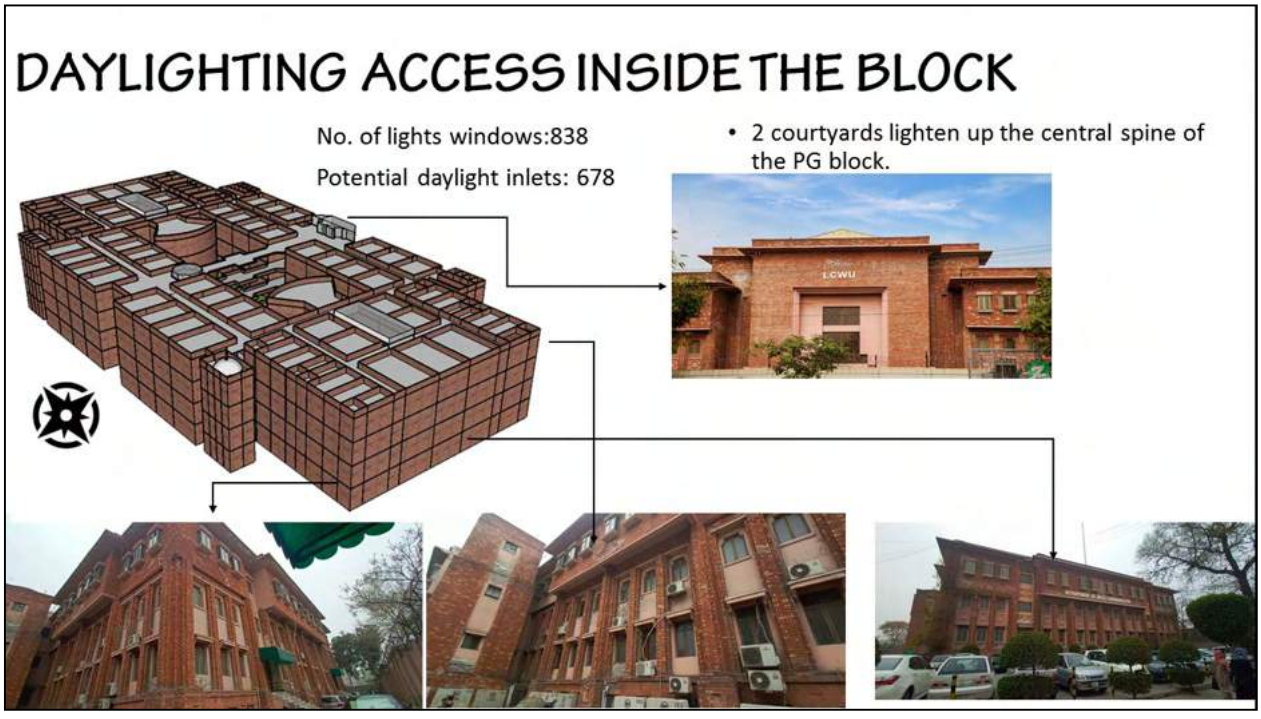

CRITICAL ANALYSIS W.R.T. SUSTAINABILITY - POST-GRADUATE BUILDING
LCWU, JAIL ROAD, LAHORE

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CRITICAL ANALYSIS W.R.T. SUSTAINABILITY - POST-GRADUATE BUILDING
LCWU, JAIL ROAD, LAHORE

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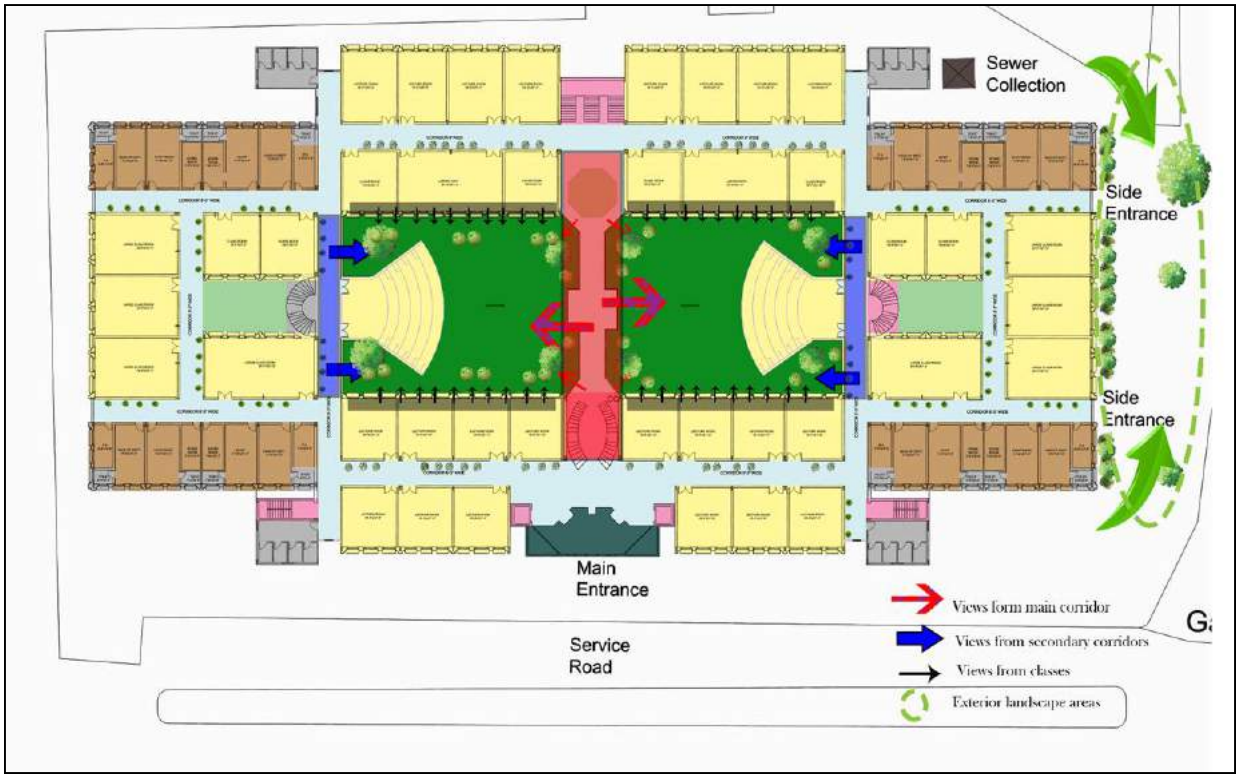
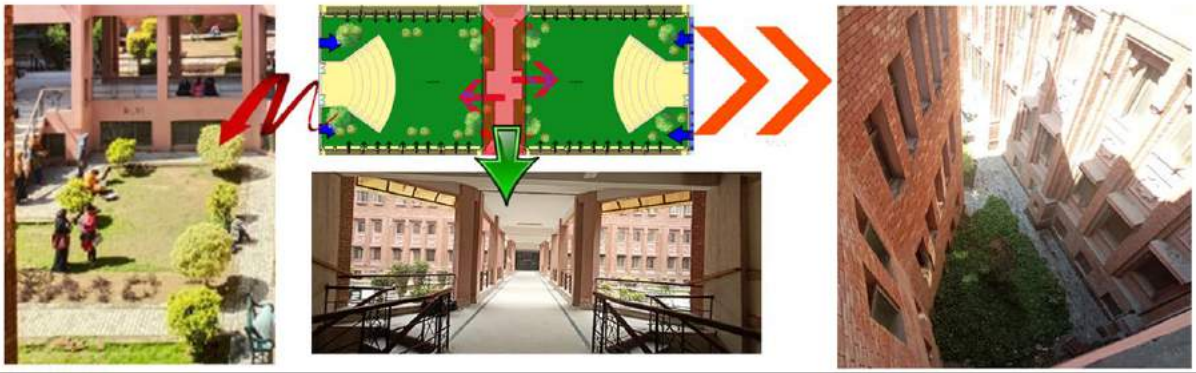


COURTYARD

Building have two central courtyards, designed on Chahar-Bagh concept. These courtyard serves the air ventilation along with the views to the corridors and classes. Also act as a communal space for students .Small heighted plants and trees are planted along with pathways that is creating a harmony between hardscape and soft cape some pockets are left over as negative space in courtyard

- where poorlylandscape is poorly designed



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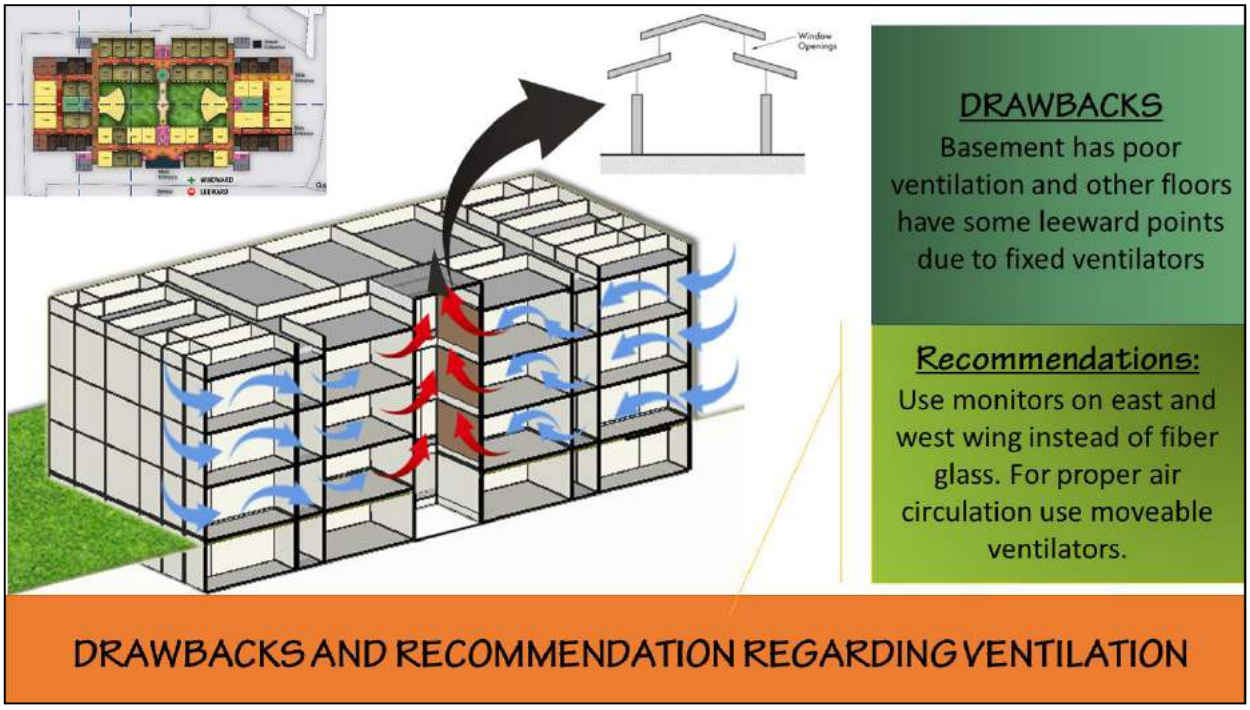

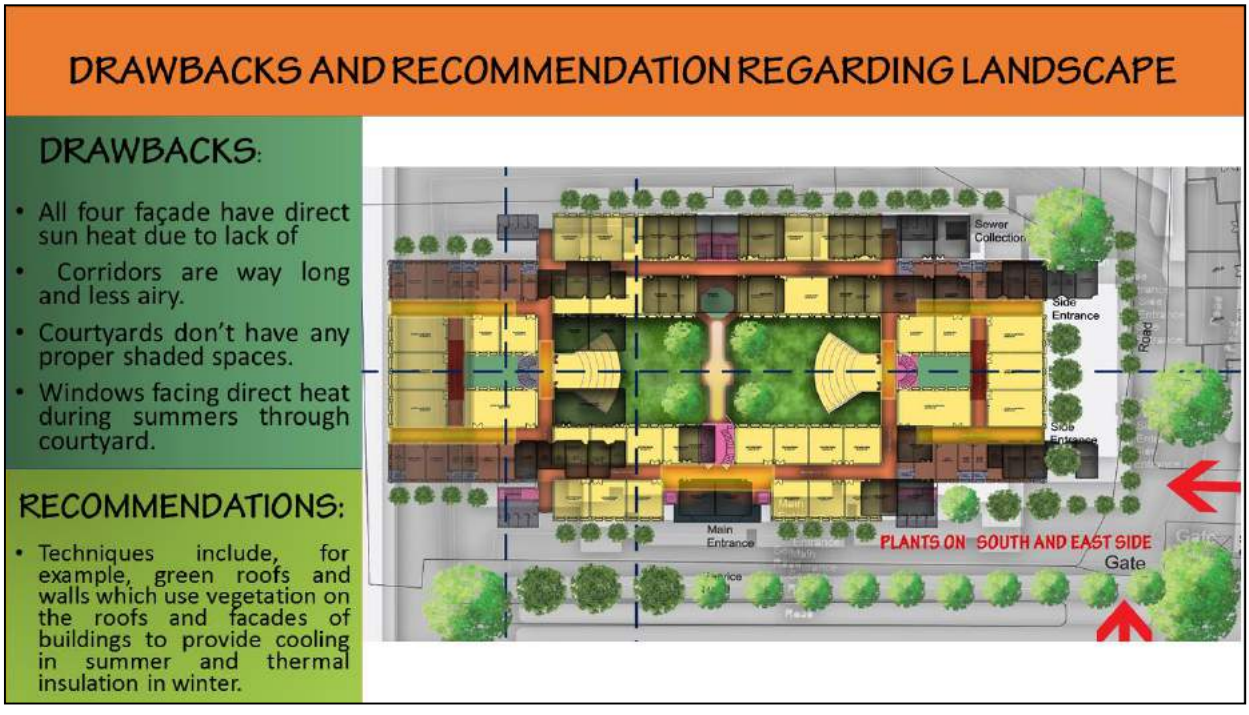

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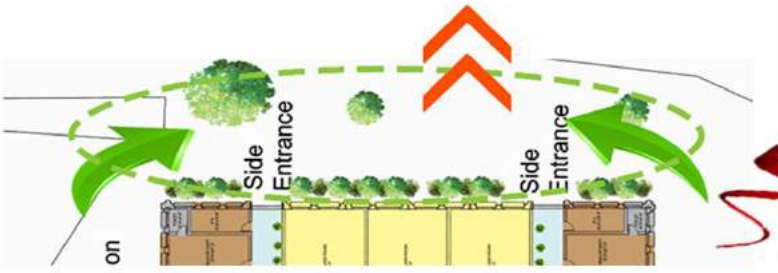
EXTERIOR LAND-SCAPE VIEWS

The major area of exterior of the building is used for .the parking
There is no landscape on . the main entrance
Some trees and plants are planted for aesthetic . purpose only
Here ,trees are not provid-ing shade to the building .and parking



RECOMMENDATIONS:

- The creation of green areas in corridors can be applicable by indoor plants
- Green corridors can improve ventilation, allowing for cooler air from outside to penetrate into the more classrooms.
- Shade trees (deciduous) and shaded sitting spaces like pergolas can be used to provide summer shade in courtyards.

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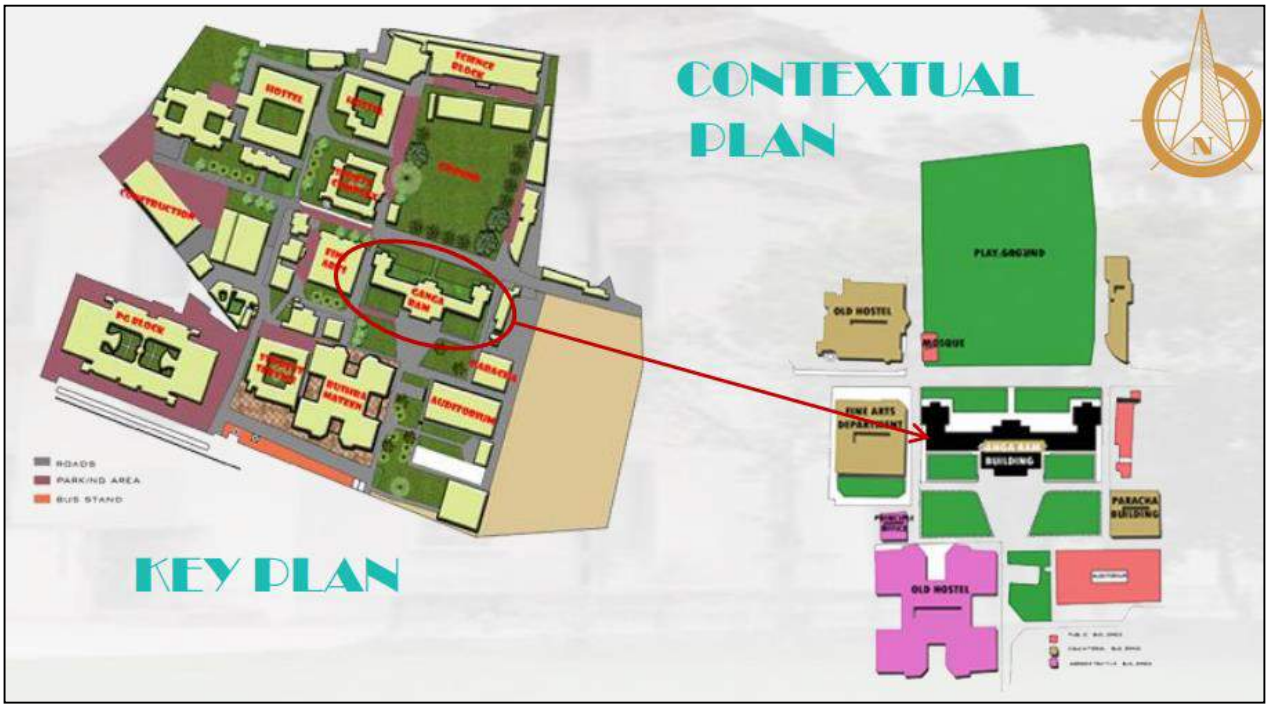

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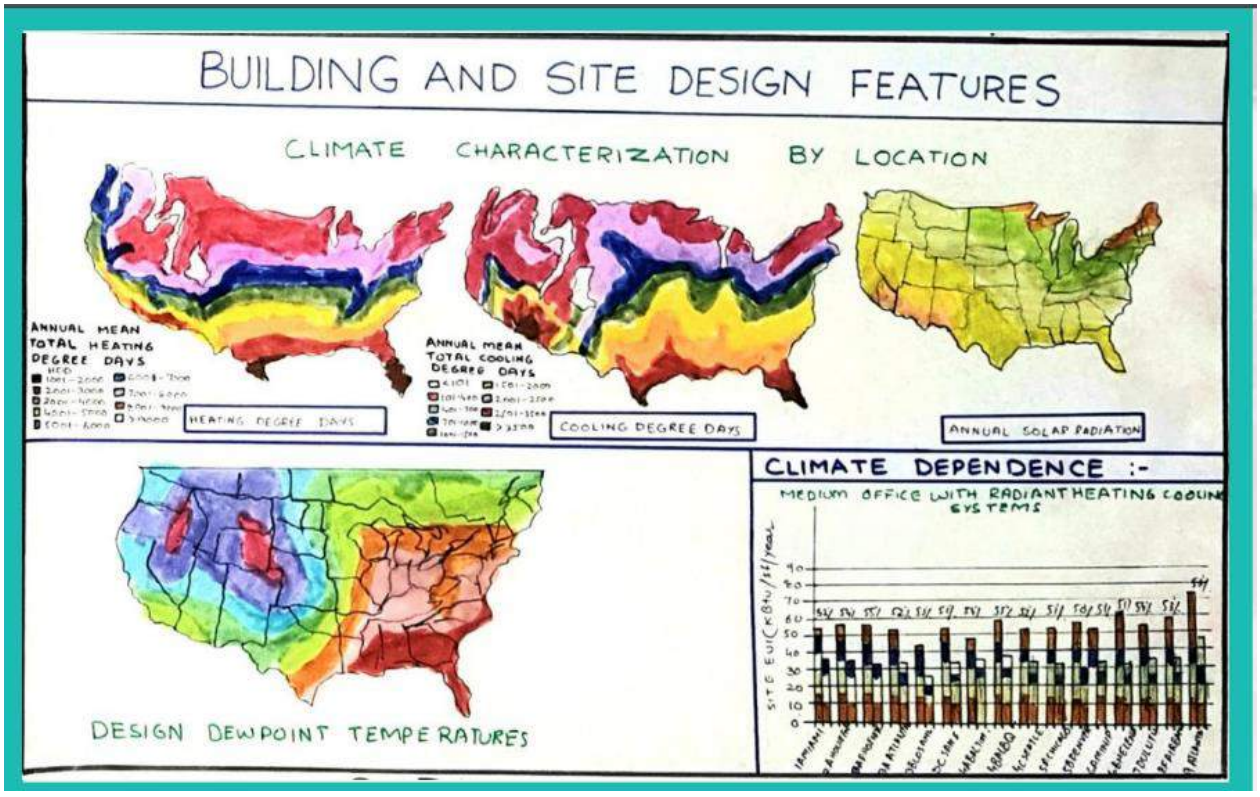

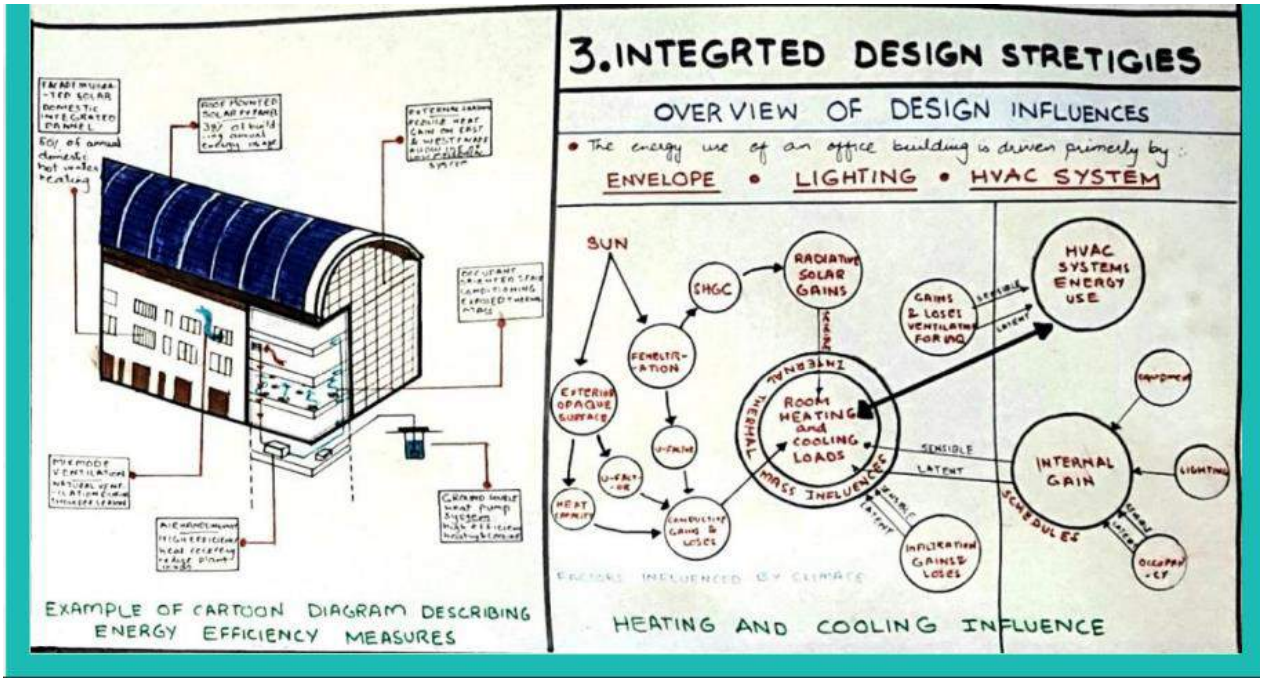

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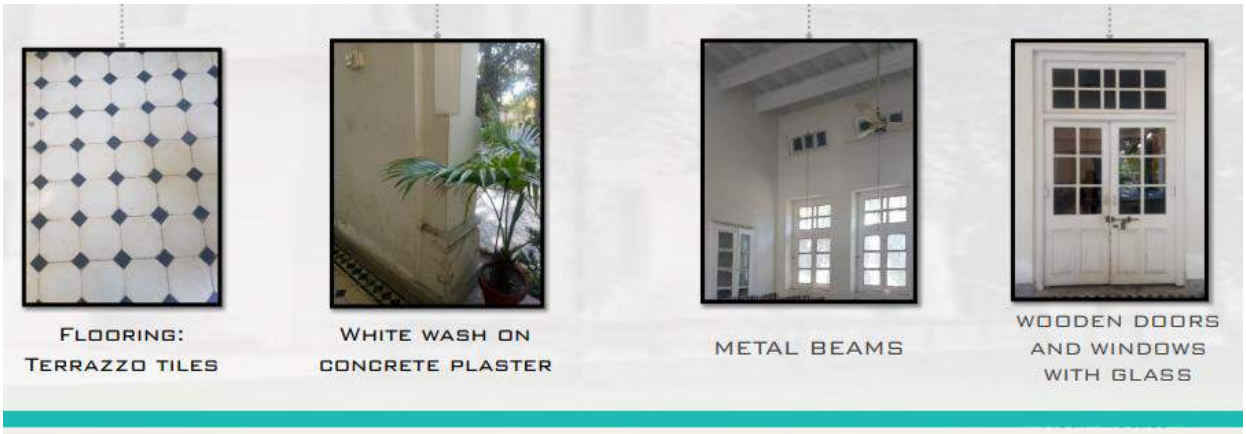
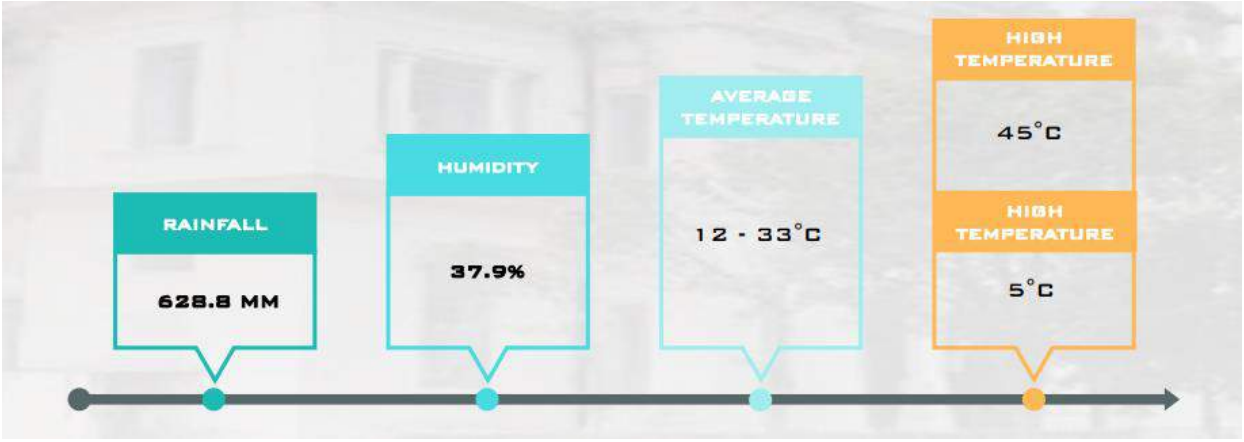
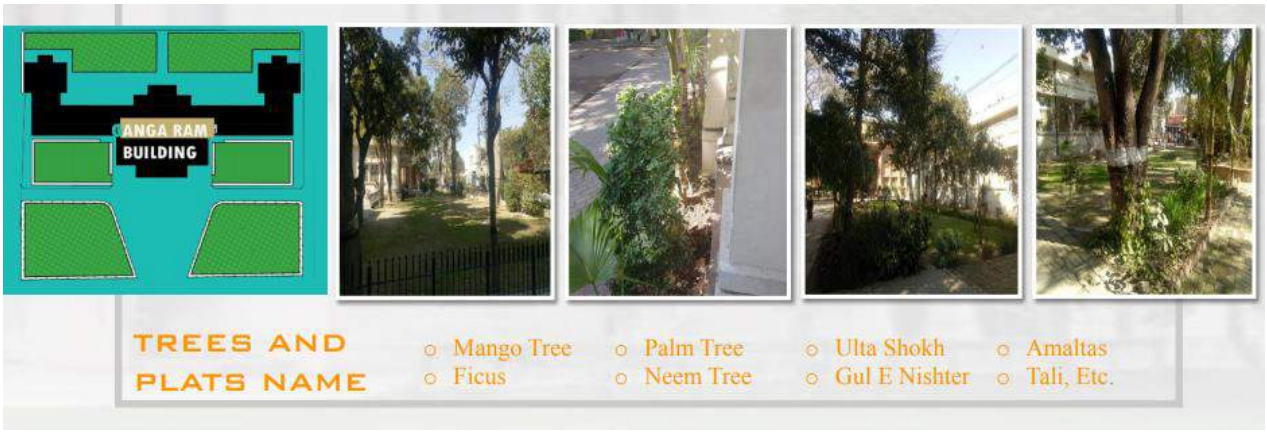
MATERIALS STUDY



TEMPERATURE ANALYSIS



LANDSCAPE ELEMENTS



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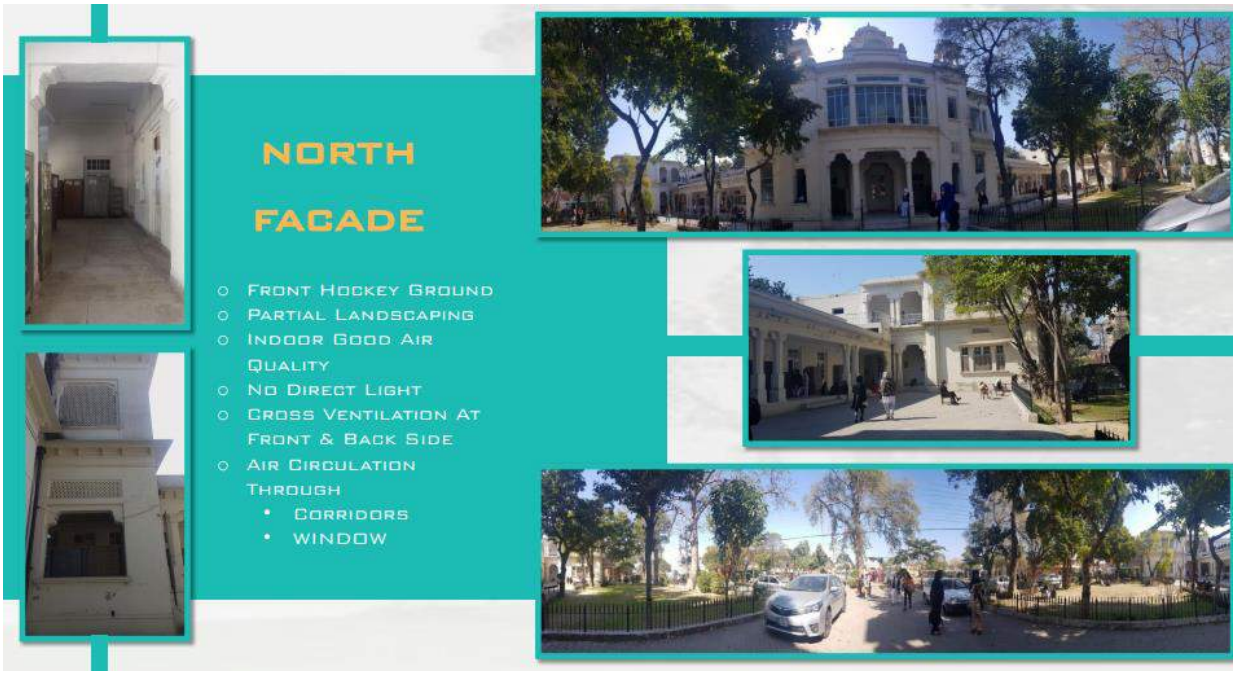

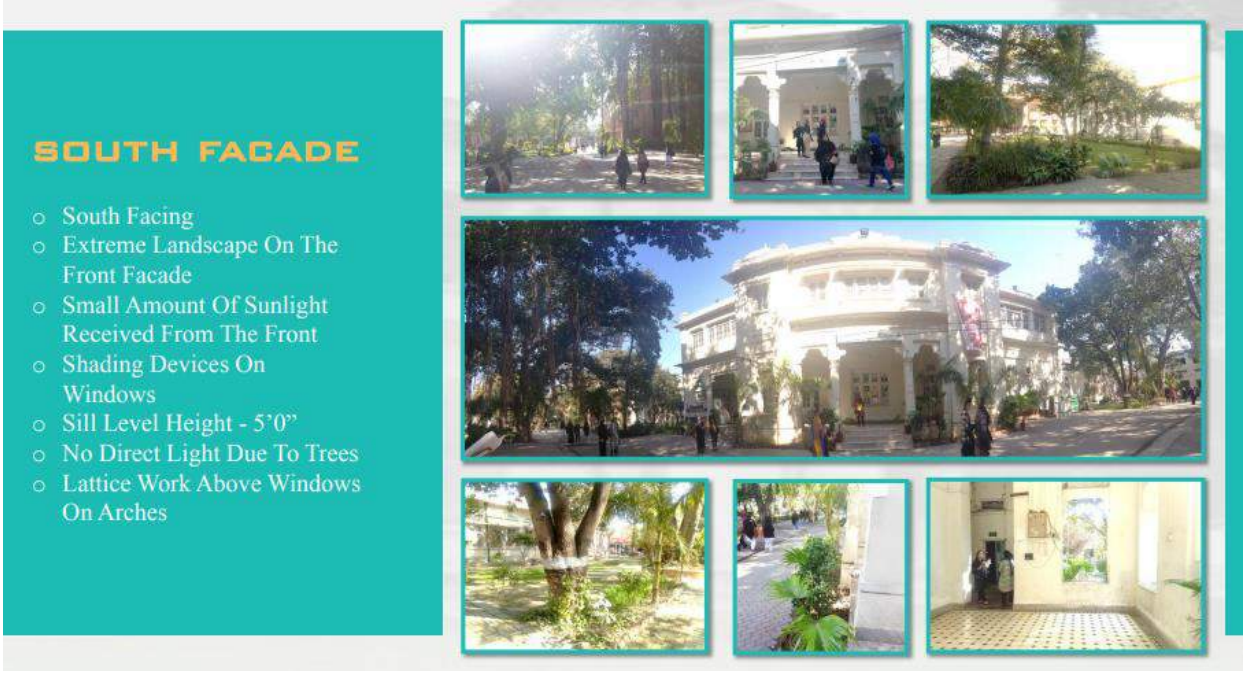

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Project Characteristics

Location: LCWU Jail, Road Lahore near gate # 1 opposite to Bushra Mateen

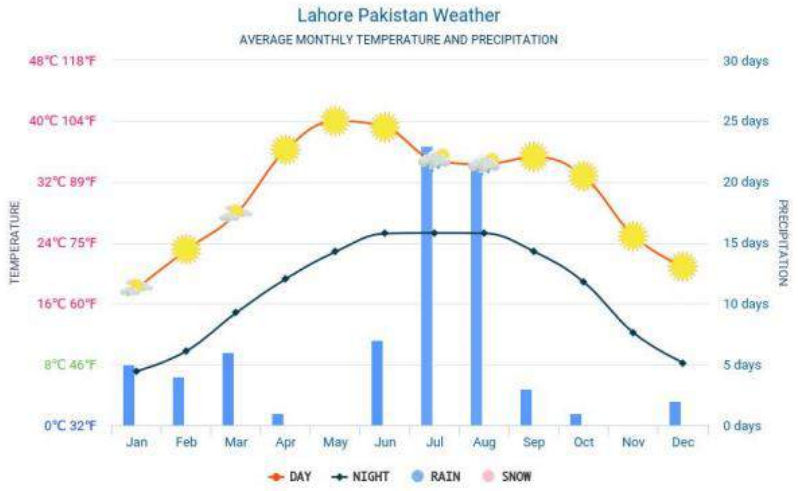
Site Area: Around 12000 sq.ft covered area

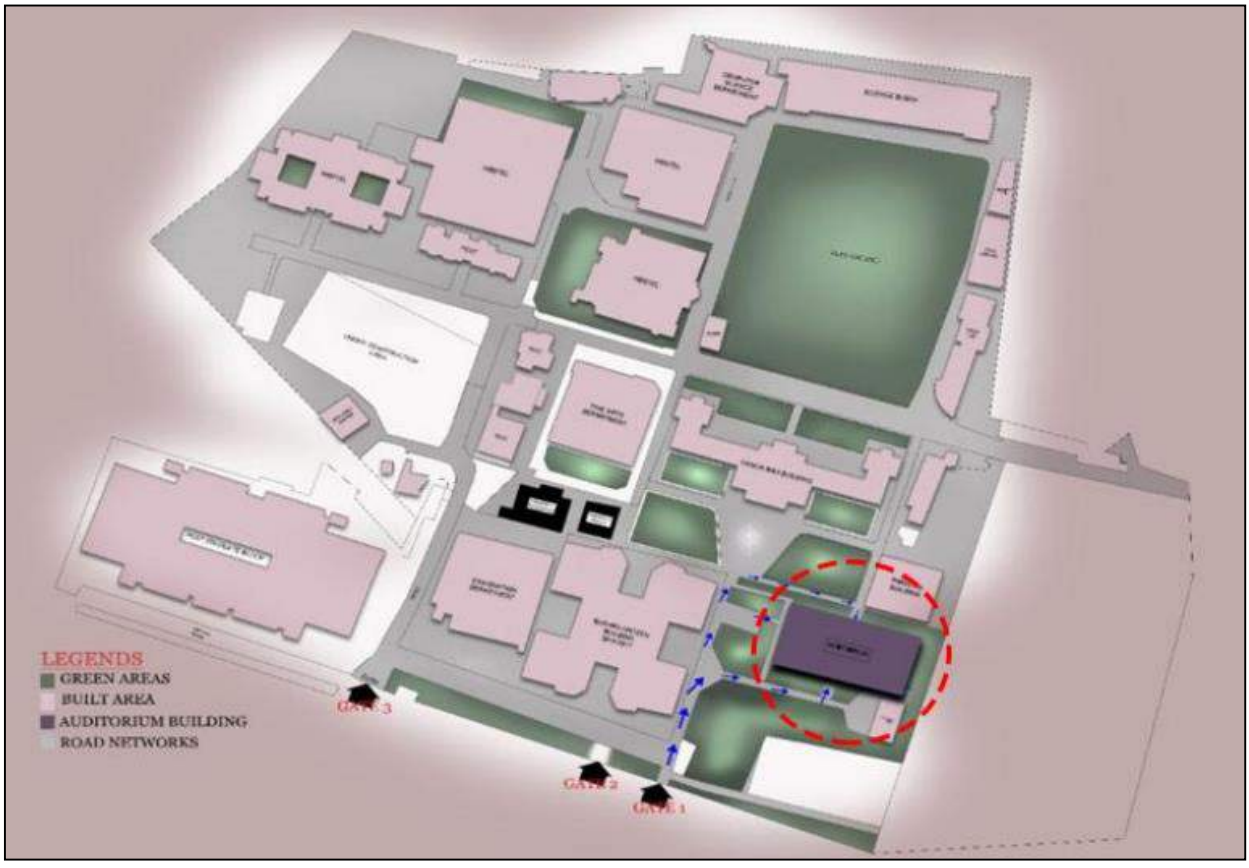
Climate:

Building : Auditorium

Building Type: Institutional (assembly building)

Architect: Ar. Fauzia Qureshi





CRITICAL ANALYSIS W.R.T. SUSTAINABILITY- AUDITORIUM BUILDING LCWU, JAIL ROAD, LAHORE

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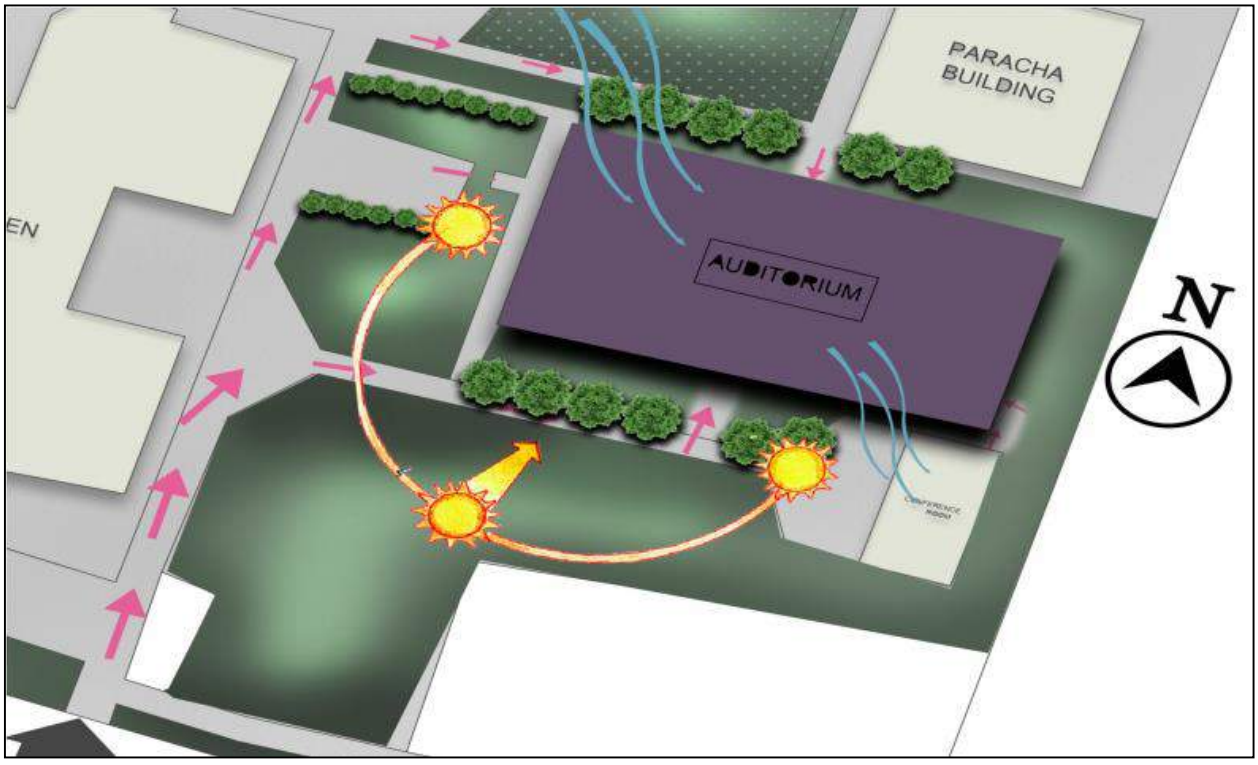
Building Analysis

- **Orientation**
  Facing: West Facing
- the primary wind blow from **North West** to **South East**
- the building is oriented along east west axis that's why it has maximum explore of sun rays at south and west
- the building **opens** towards **north south** and **west** side making advantage of passive light
- The exterior is built up of thick wall



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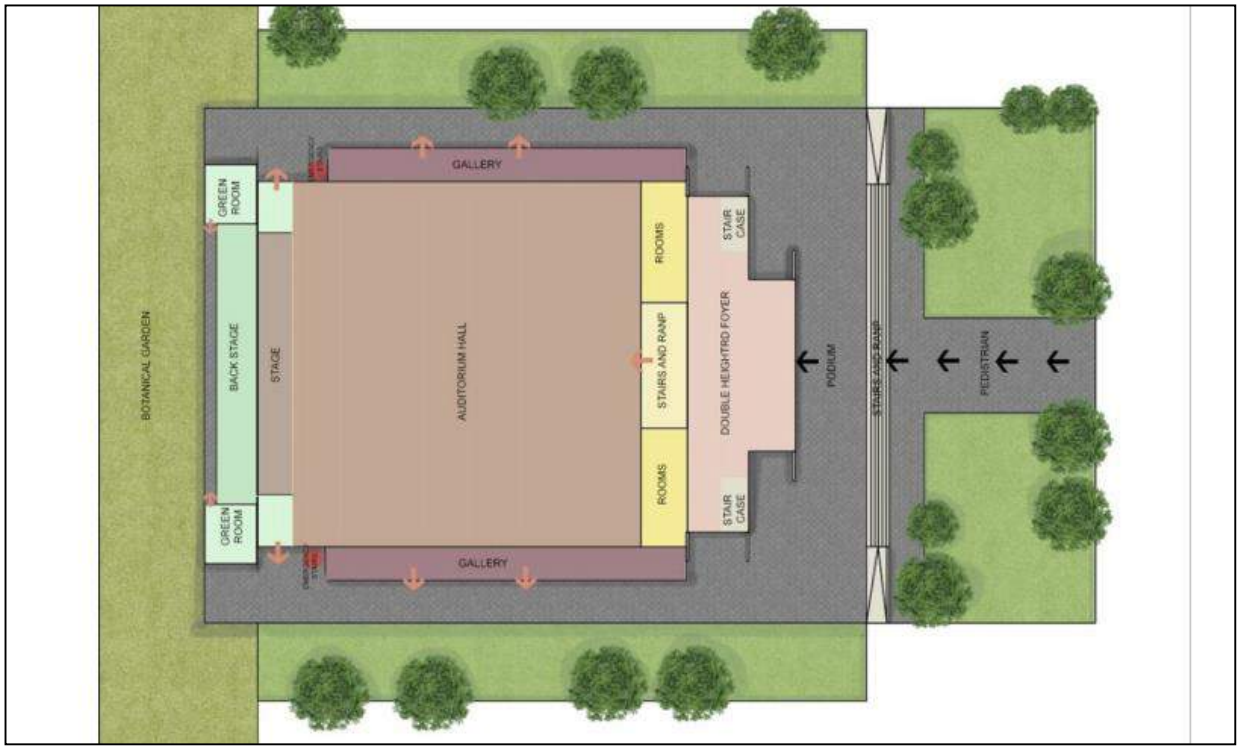

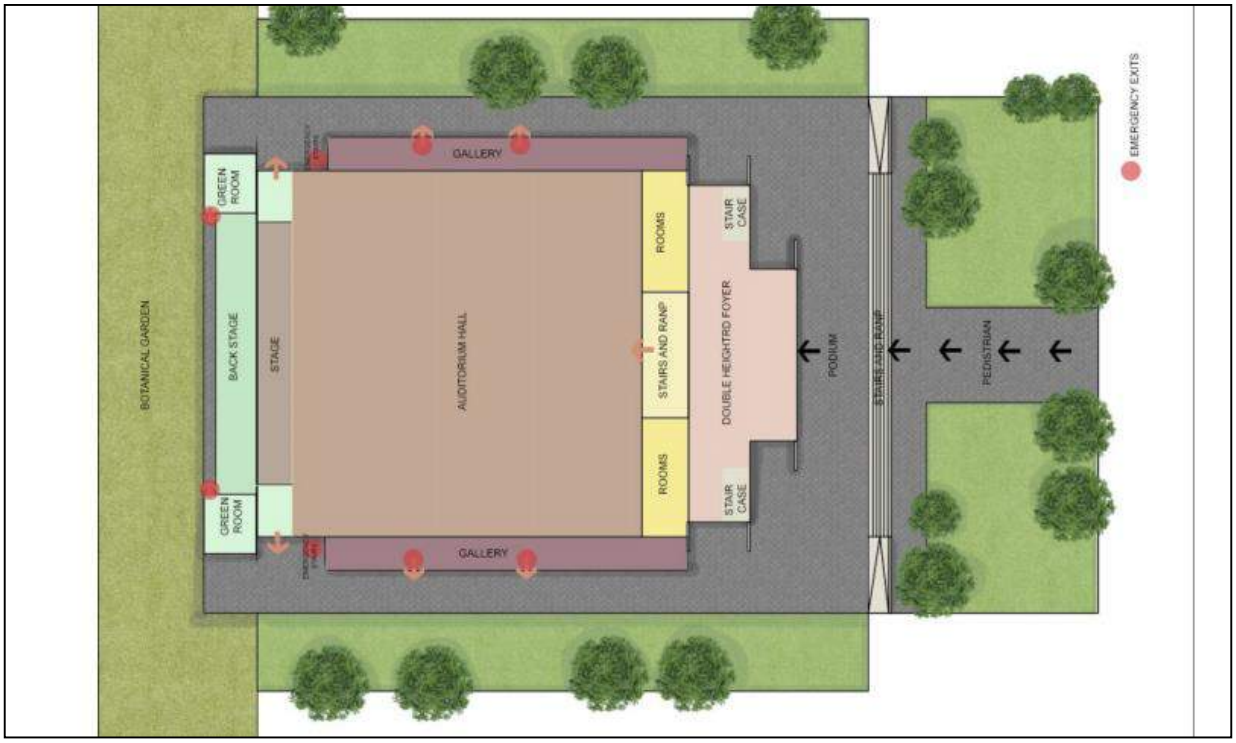

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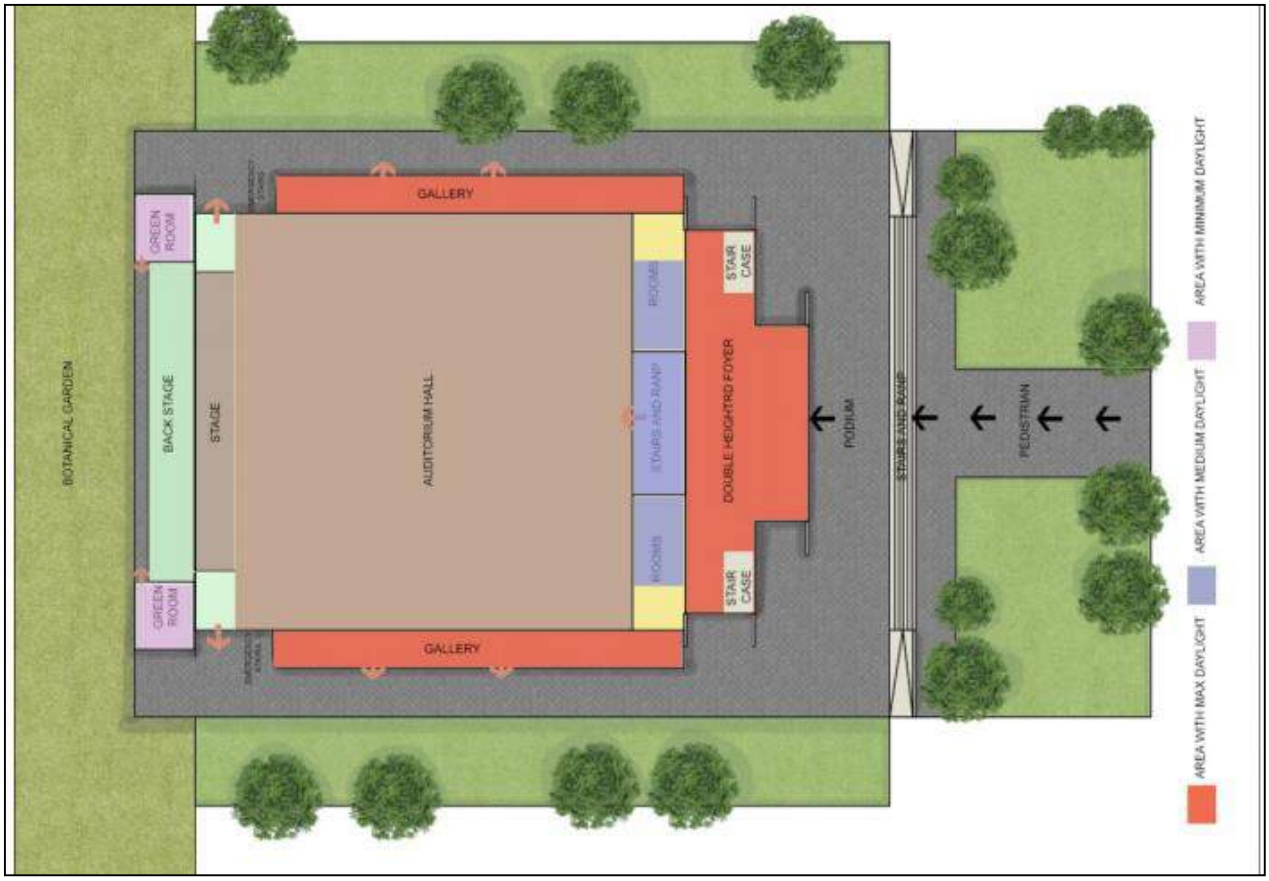
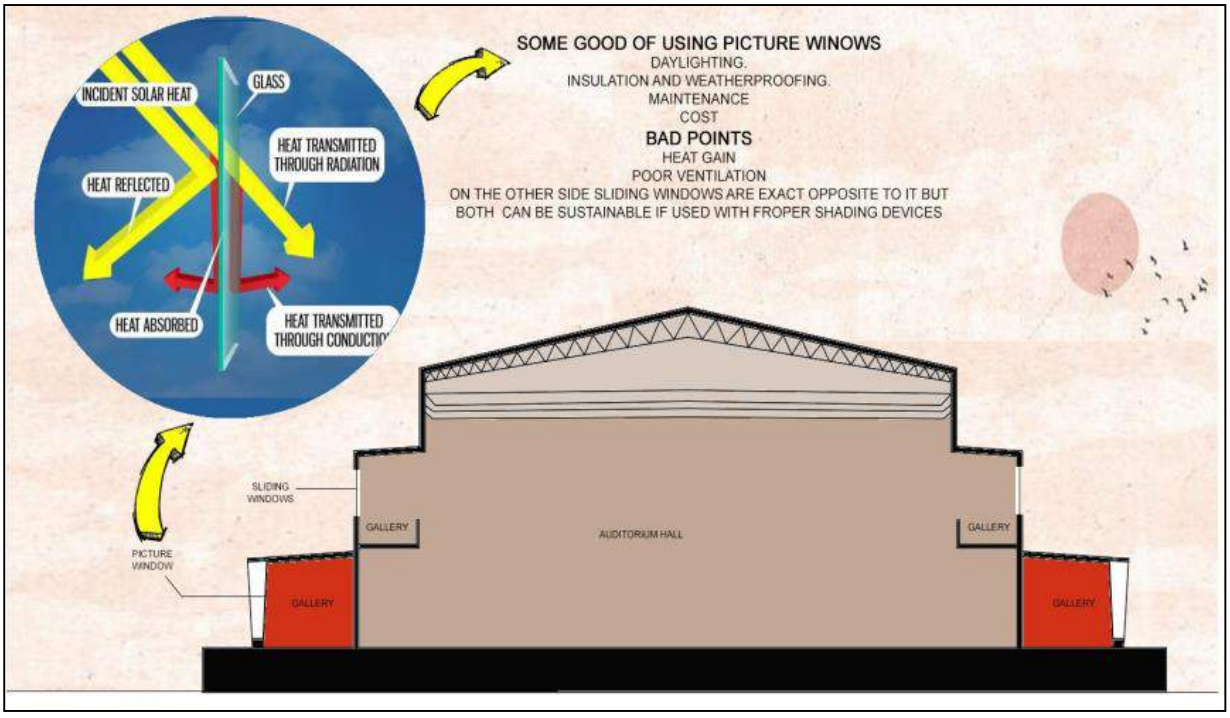
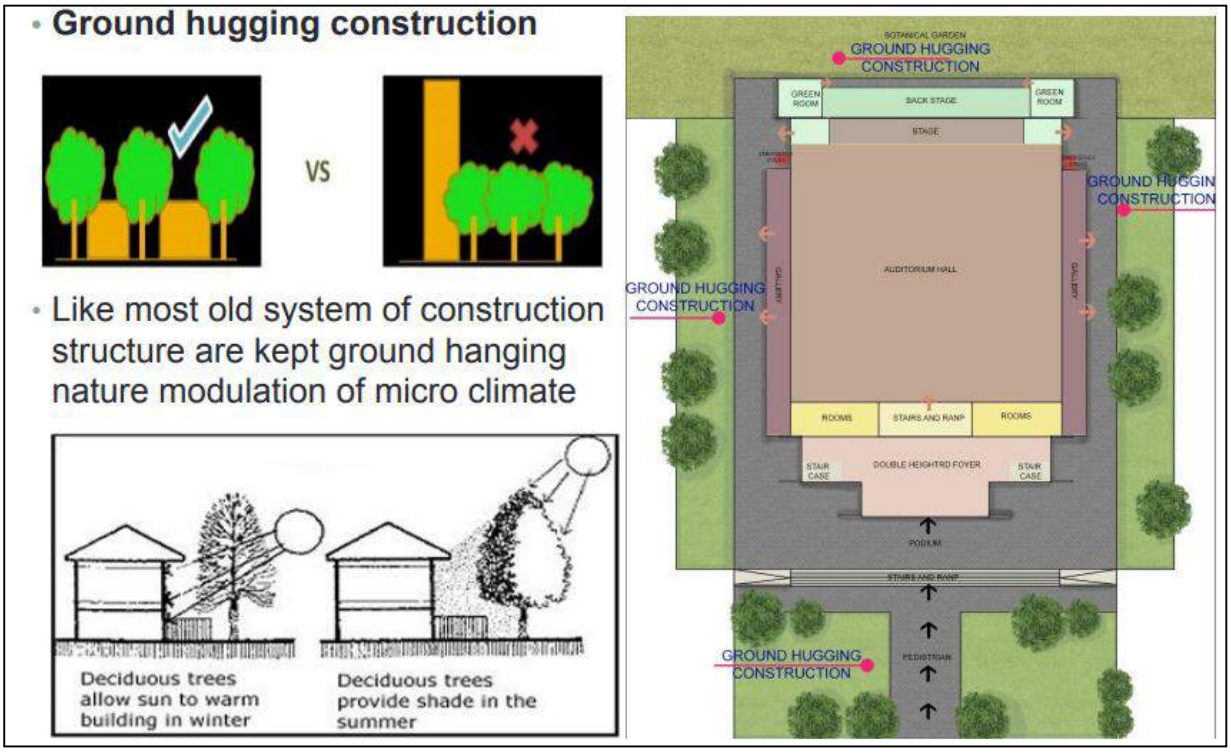



INCIDENT SOLAR HEAT
GLASS
HEAT TRANSMITTED THROUGH RADIATION
HEAT REFLECTED
HEAT ABSORBED
HEAT TRANSMITTED THROUGH CONDUCTIO
SOME GOOD OF USING PICTURE WINOWS
DAYLIGHTING.
INSULATION AND WEATHERPROOFING.
MAINTENANCE
COST
BAD POINTS
HEAT GAIN
POOR VENTILATION
ON THE OTHER SIDE SLIDING WINDOWS ARE EXACT OPPOSITE TO IT BUT
BOTH CAN BE SUSTAINABLE IF USED WITH FROPER SHADING DEVICES
SLIDING WINDOWS
PICTURE WINDOW
GALLERY
AUDITORIUM HALL
GALLERY
GALLERY
GALLERY


Ground hugging construction
VS
Like most old system of construction structure are kept ground hanging nature modulation of micro climate
Deciduous trees allow sun to warm building in winter
Deciduous trees provide shade in the summer
BOTANICAL GARDEN
GROUND HUGGING CONSTRUCTION
GREEN ROOM
BACK STAGE
GREEN ROOM
STAGE
GROUND HUGGIN CONSTRUCTION
AUDITORIUM HALL
GROUND HUGGING CONSTRUCTION
GALLERY
GALLERY
ROOMS
STAIRS AND RAMP
ROOMS
STAIR CASE
DOUBLE HEIGHTED FOYER
STAIR CASE
PODIUM
STAIRS AND RAMP
GROUND HUGGING CONSTRUCTION
PEDESTRIAN

- Green vegetative roof can be used to cover the area of galleries

Solar panels can be used on the roof of auditorium to make it more efficient

- Brick jali wall

Instead of using large fixed glass in galleries a mesh type ventilation of bricks can be used for fresh breeze and day light to enter

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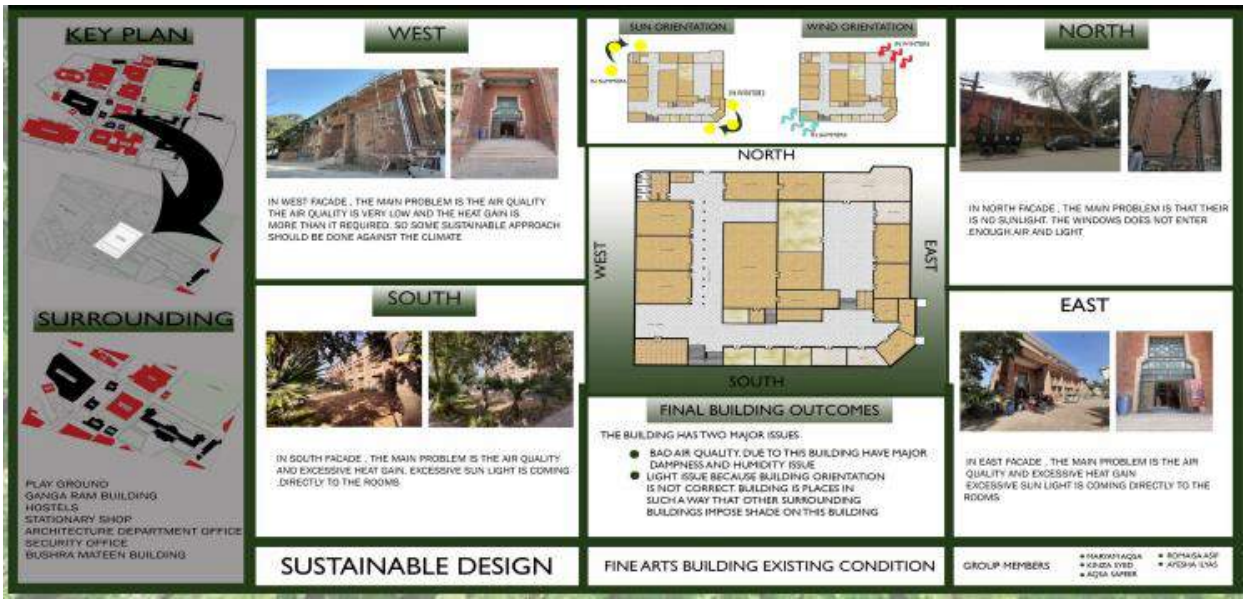

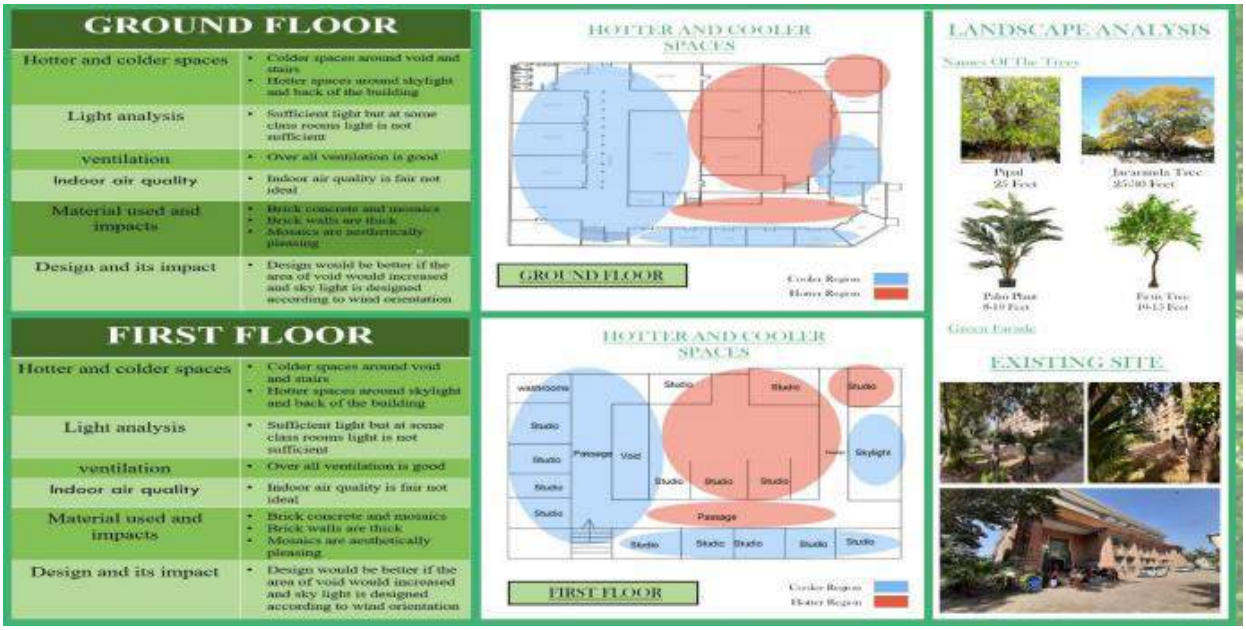

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LCWU, JAIL ROAD, LAHORE

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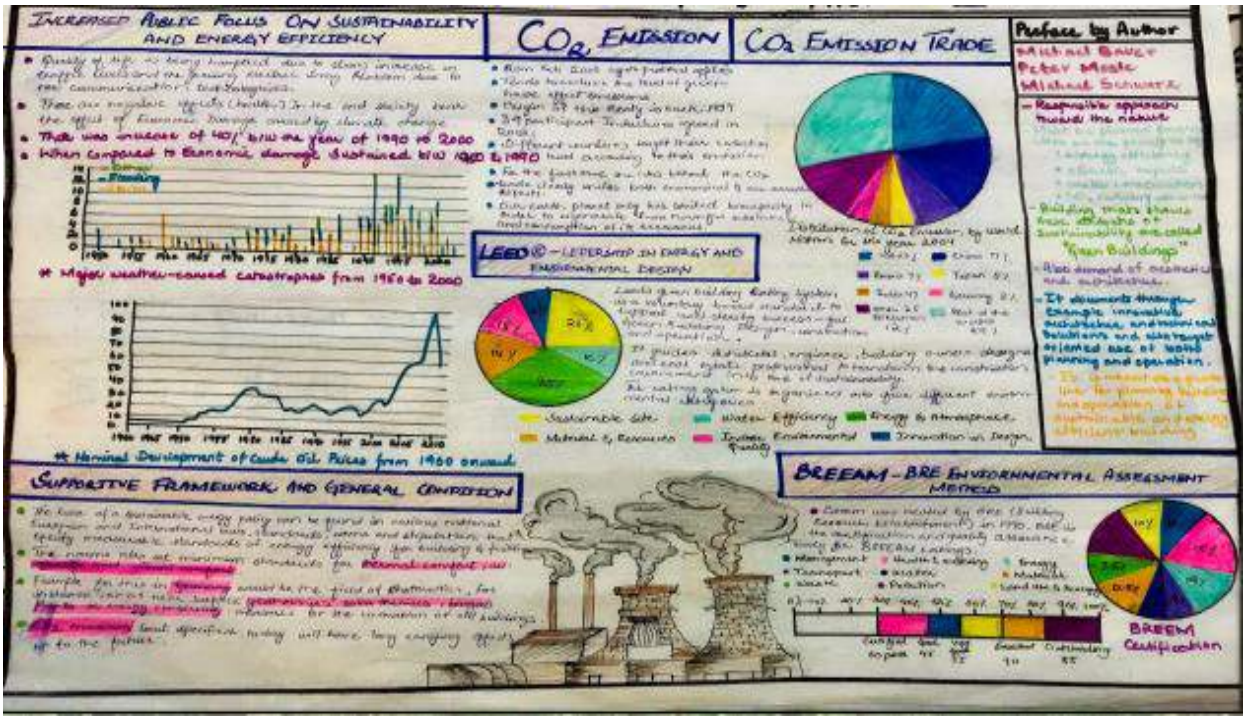

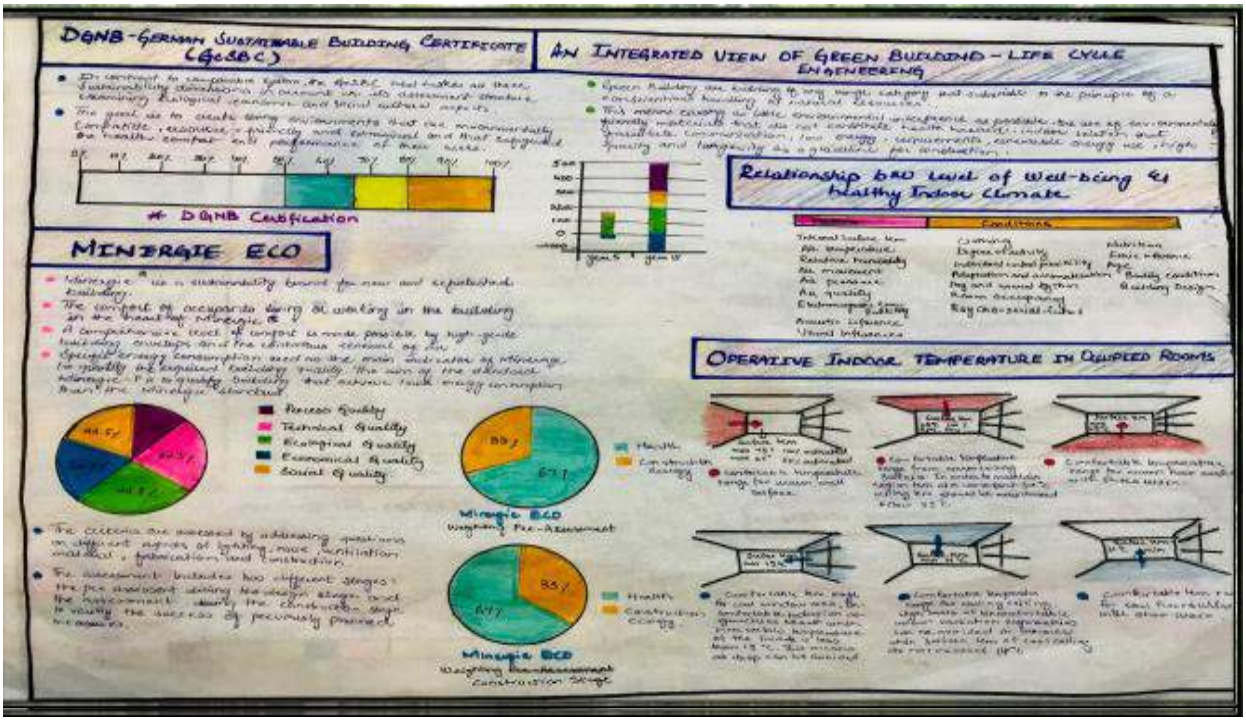

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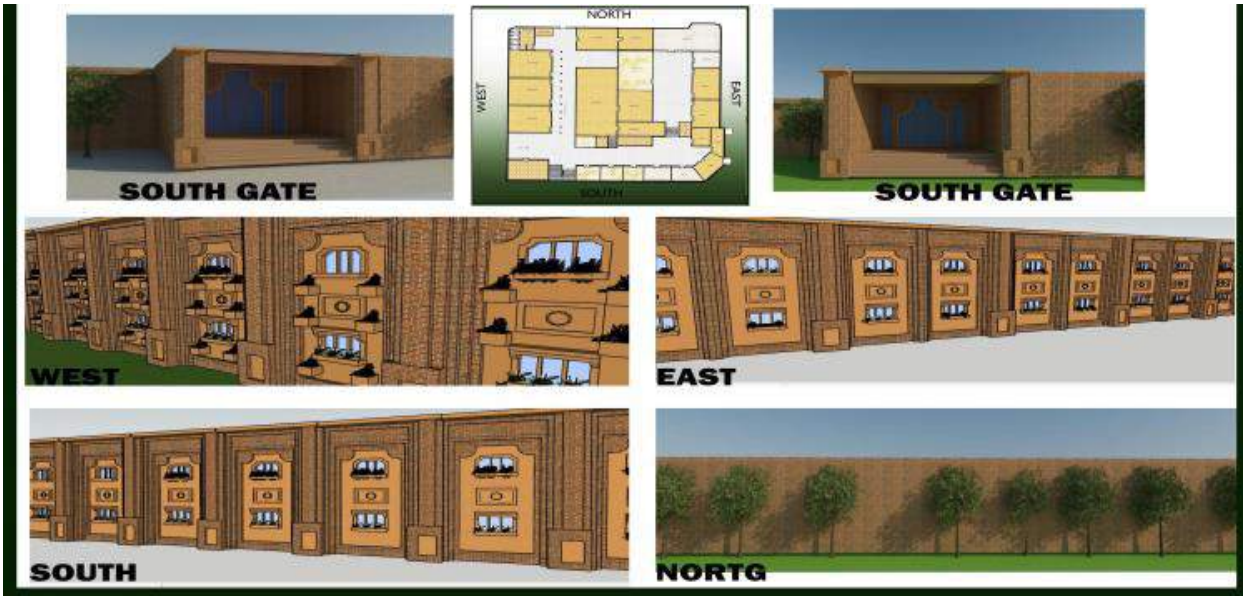

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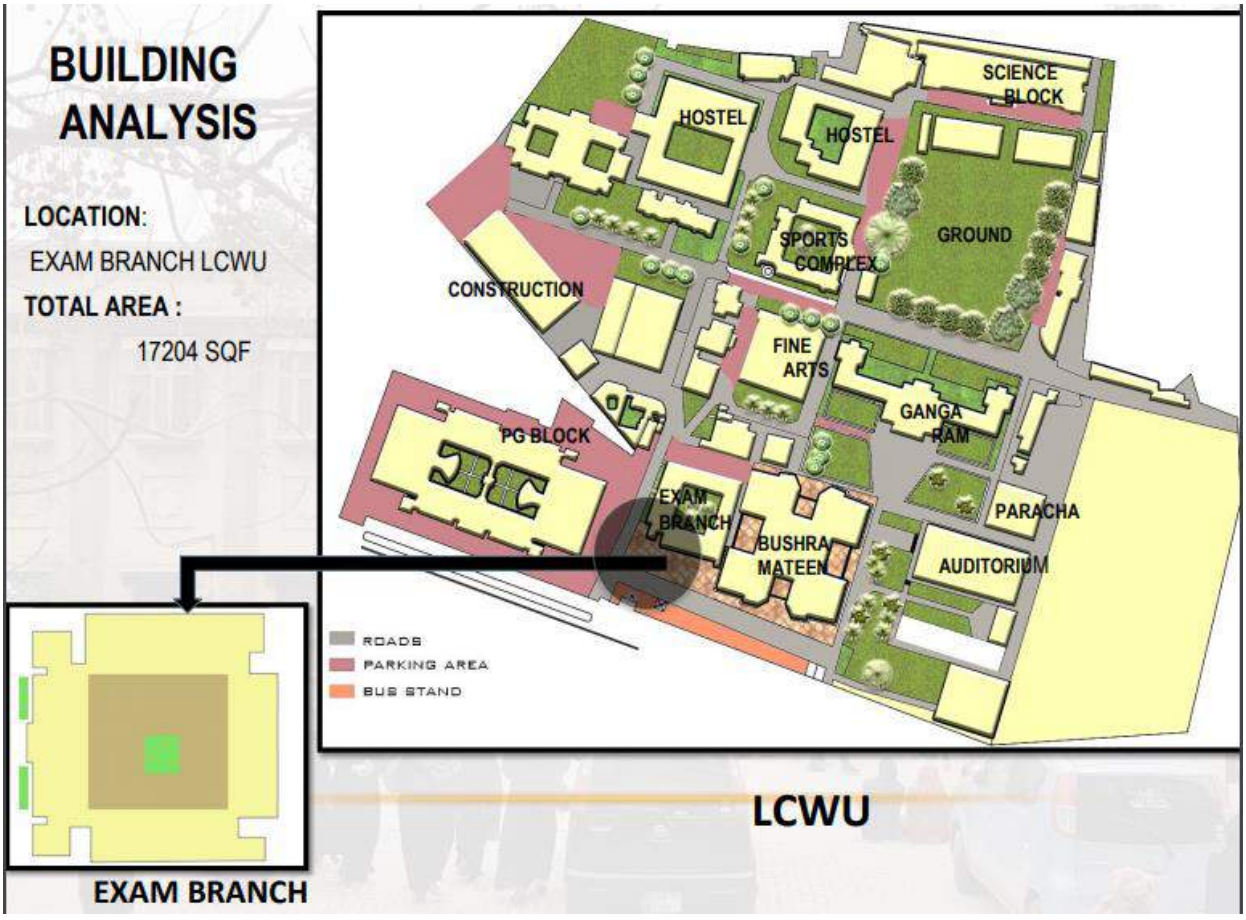

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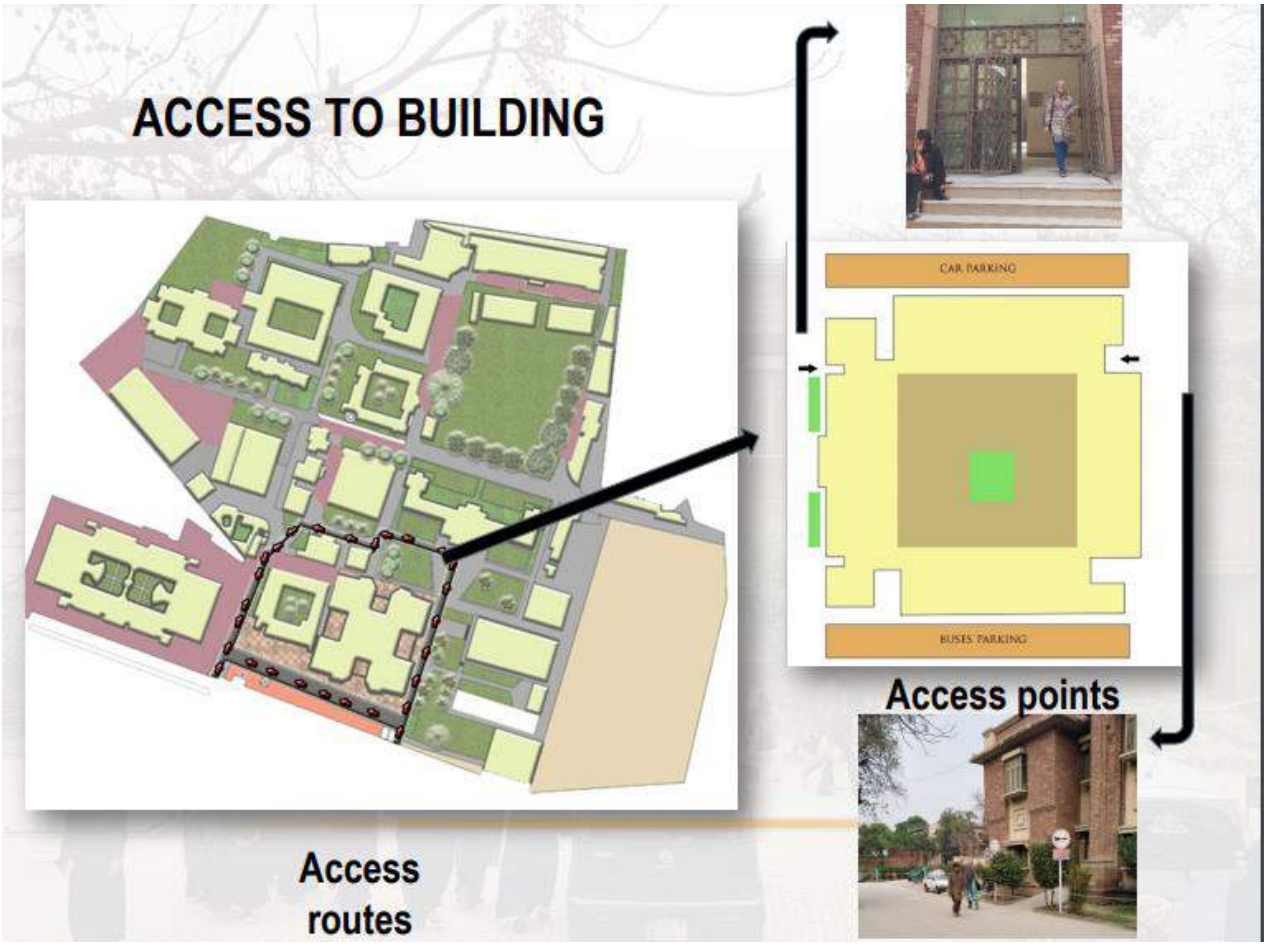

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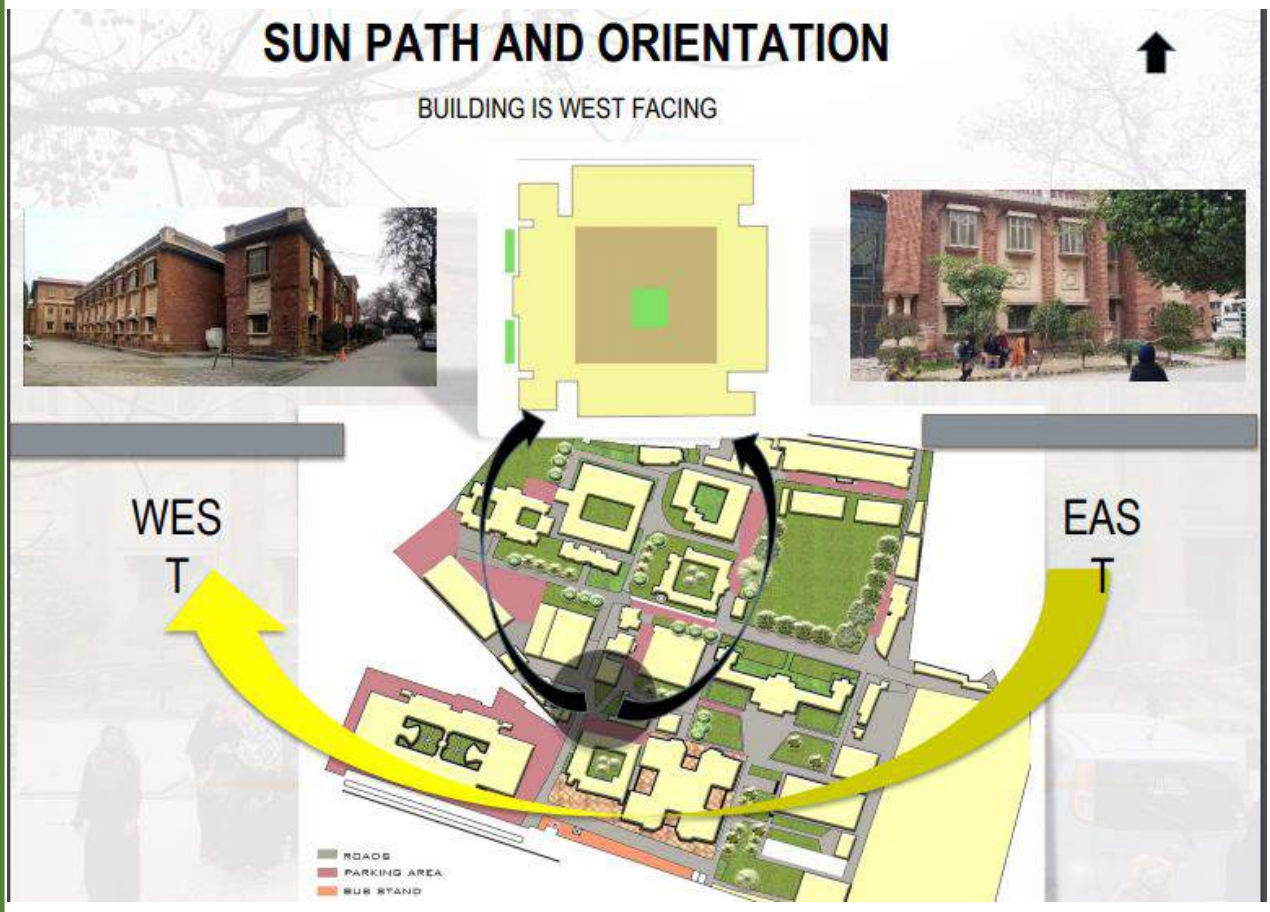

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TREES IN COURTYARD

- Saraca asoca (Ashoka tree)
- Canocarpass shrub
- Bauhinia variegta (Kachnar plant)

Major area is hardscaped area with use of trees

- Landscape contributes in making the environment cooler.
- Tree acts as natural shade to the building
- In courtyard trees are provided at west and south direction

FOR WINDOWS:

For windows, there are two solutions:

1. **Polycarbonate plastic:** Plastic rivals traditional materials for windows and frames, providing competitive energy efficiency, aesthetics, design flexibility and cost criteria. (maximum temperature 130C, mimimum temperature -40C)—the same material used in eyeglasses and known for durability and clarity—is used in windows.

It is Shatter-resistant and lightweight, the plastic product has low thermal conductivity, thus reducing heating and cooling costs though still providing protection against dangerous weather.

The glass will be replaced with this plastic.

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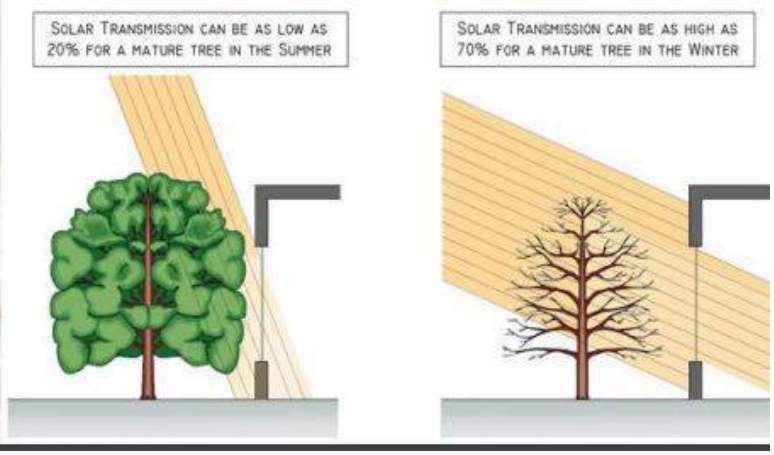
- On south side of the building, the best way to achieve shading is through **LANDSCAPING**, by using deciduous trees.
- The Environment Protection Department (EPD) Punjab has made a list of 32 **'Pollution Abating Trees**, which belong to the native species of the trees found in the Punjab a couple of decades ago. The EPD has sent the list of the environment-friendly trees to various departments including the Punjab Forest Department to promote the culture of planting tall trees in order to save environment.
- The trees approved by EPD are mostly deciduous.



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