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CRITERION 2- TEACHING –LEARNING AND EVALUATION

Key Indicator – 2.3 Teaching-Learning Process

2.3.1. Student centric methods,such as experimental learning,participative learning and problem solving methodologies are used for enhancing learning experience using ICT tools.

a)Learning Methodologoes in Architectural curriculam

- **Participative Learning**
- Students underdoes various
- Activities, workshops
- Site Visits, Guest lectures
- Data collections & Market surveys are considered under the Participatory Learning.
- **Experimental Learning**
- Experimental Learning enhance the knowledge of Architectural design concepts. Students learn through this Experimental methodology in different subjects
- **Problem Solving Learning**
- Settlement study as a concept, not only helps us understand evolutionary trends in architecture, society and culture of a place.
- The main aim & objectives is to to assess and evaluate the overall development of the village/Town or city & to understand the pattern of living.
- Students identify problems or requirements.

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b) Teacher's use ICT Tools for effective Teaching learning Process

Sr.no	contents
1	ICT enabled facilities
2	List of E-content Powerpoint Presentation
3	List of Digital Data of Architectural Thesis Project
4	Use of Social Media Facebook Instagram Whatsapp groups of Class and Teachers
5	Google suite/Google classroom

c) Ratio of mentor to students for academic and other related issues (Data for academic year 2021-22)

Sr.no	contents
1	List of Full Time Teachers on roll
2	List of Students
3	Mentor list
4	Mentor Mentee Allotment
5	Student - Full Time teacher ratio
6	Faculty meetings regading mentor mentee

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Participative Learning Methodology

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Students underdoes various
Activities, workshops
Site Visits, Guest lectures
Data collections & Market surveys are considered under the Participatory Learning.

Some of the sample work of academic program are attached as below

- Brick workshop
- Plaster Of Paris workshop.
- Guest Lecture – Hotel & Resort design.
- Site Visit - Krishna Mandir
- Site Visit -Sewage Treatment Plant- BS I
- Site Visit - The Fire Station @ Pimpri
- Site Visit - Moraya Temple
- Workshop-Building Technology And Material Workshop
  RCC Slab And Staircase Models
- Workshop on Rendering Techniques
- Pottery Workshop
- Different types of Market survey
- Market survey – Non-Timber window
- Market survey – Flooring material /finishes
- Market survey – Material for interior
- Different types of Data Collection
- Amritsar –Heritage City
- Jaisalmer- The Golden City
- Yamuna Riverfront Development study.

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BRICK WORKSHOP FOR 1ST YEAR STUDENTS

Date: 03-12-2018 to 07-12-2018

Organized by: PDEA'S College of Architecture.

Aim: To encourage students to learn Building Technology and Materials with the help of miniature models to help them to understand the structural mechanism.

Brief: The workshop was under taken by Mr. Vikas Shimpi which covered various aspects of Brick Structures. The pointers covered were: -

I. Introduction about Bricks & Bonds.

II. Introduction to 15 Types of Brick & their appropriate uses.

III. Introduction of tools used for Brick construction.

IV. Introduction to Types of Bonds

V. Mortar and Concrete Proportion.

VI. Load Bearing Sub & Super Structures.

VII. Domes, Arches, Piers, Vaults, Decorative Column, Foundation etc.

All these points were covered during the workshop. Where the students had fun making miniature model of brick bonds, domes, vaults etc. The students had great time during the entire workshop activity.

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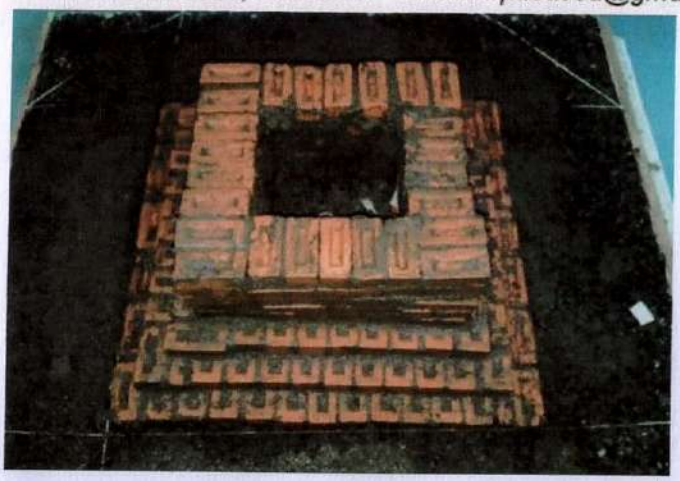

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Photographs of Hands on Brick Workshop

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PLASTER OF PARIS (POP) WORKSHOP REPORT

Workshop on Plaster Of Paris was conducted for the first year batch of **2019-2020** in the first week when the college resumes. It was conducted to create interest and for the better interaction among themselves and to get familiar to the college. Workshop was conducted on **7th of August 2019and by the Ar.Swati Rode**. Total 11 students of first year attended the workshop.

Content of the workshop:

Introduction and information on materials

PPT presentation on the Uses of the material and process of demonstration.

Preparation of moulds for casting

Preparation of batch of Plaster Of Paris

Casting the moulds, finishing, and sealing.

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Conclusion :

Workshop was successfully conducted which helps the students to learn

To create a perfect batch of plaster ,

Design and create the Artwork by the use of POP with proper design of mould.

Painting to the Artwork

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GUEST LECTURE ON "HOTEL & RESORT DESIGN"

Guest lecture on "Hotel & Resort Design" was conducted for the students of 1st,2nd ,3rd ,4th & 5th year.It was conducted by Ar.Anil Parvatikar & Chaitanya Gadre on 17-01-2022.

Lceture mode:Online (Google Meet)

Session-01 (9:00-11:00)

Guest Speaker- Ar. Anil Parvatikar

A.S.Parvatikar is a Leading Architectural & Interior Designing Firm Based in Delhi NCR Specializing in Hotels,Housing & Housing and industrial Projects .

He has more than 25 years of experience. He Executed Several Prestigious Hotel Projects Such As Maurya Sheraton (New Delhi);Leela penta Now Leelakempinski(mumbai) ,Park Sheraton (Chennai),Holiday InnJaipur,Radissonblue (New Delhi)Ashok Hotel (New Delhi For SARC Summit &ASIAD Games 1982.)Ramada (Gurgaon),Grand Savoy (Jammu),Taj Gateway (Jammu),Lemon Tree (Lucknow) and many more Several Private Hotel Properties

He has also executed Housing & Industrial Projects around Delhi Ncr.

Lecture was very informative.Lecture covers,what is Hotel?waht is business hotel?Facilities of 5 star Hotel,what are the services and How it works.

Session-02 (11:15-12:30)

Guest speaker- Chaitanya Gadre

Guest speaker Chaitanya Gadre he has Hotel Management and he also excecuted various hotels in pune and many cities.He has expertise in Kitchen designing.As we know Kitchen is the heart of the Hotel.Lecture focuses on the Kitchen Layout ,Kitchen management and ideal kitchen designs.

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Krishna Mandir Site Visit Report

11 Students of 1st year PDEA Along with the two Teaching faculties were taken to the Krishna Mandir, Nigdi, Pune on 19th Sept 2019.

This temple is built as per the traditional Keralite temple architecture.

Aim :

The aim of this site visit is to aid students to acquire knowledge of live sketching.

Objectives :

Sketching is generally a prescribed part of the studies of students of Architecture.

Sketching is a method of recording or working out ideas.

Architectural sketches are all about communicating ideas, whether it is solving initial design problems or working through ideas and details.

Live sketching helps to convey ideas, demonstrate functionality, visualize user flow, and illustrate anything that requires interaction.





Conclusion :

Concept of live sketching was understood to students which helps them to learn more with practical exposure.

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VISIT TO SEWAGE TREATMENT PLANT- BS I

Students of 2nd yr. had visited Sewage Treatment Plant ,39 students organised by B.s-I faculty Prof. Deepali Randhe and other Co-Ordinating staff on dated 03 July 2019 at 10.00 a.m.
The S.T.P. is situated in Arkurdi, Ganganagar under HNB Engineers PVT. LTD.
The STP consist of collection, transport & treatment of domestic waste water along with it's safe disposal.

Objectives :
Our main purpose to this visit was to have the practical knowledge about waste water treatment process, by this visit we are now familiar with industrial environment & get knowledge of different units of waste water treatment plant/STP, components of STP are constructed or how does it works, so it's very convenient to see all the practical and components in real time work.

Working Of S.T.P. :

1.Primary Treatment
This process involves the separation of macrobiotic solid matter from the waste water. Treatment is done by pouring the waste water into big tanks for solid matter to settle at the surface of tanks is removed by large scrappers at center of cylindrical tanks remain water pumped to secondary treatment.

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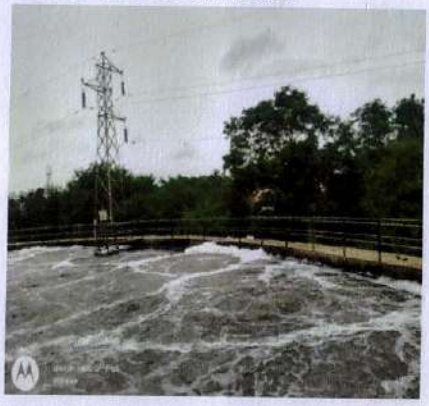
2.**Secondary Treatment**

The next step of treatment process is secondary clarifier. The water from the primary tank is transported to the secondary clarifier for adding chemicals such as lime and alum to reduce the PH of water.



3. Aeration Tank

The settled waste water enters aeration tanks where air is blown into the liquid to provide oxygen for mixing & to promote the growth of micro-organisms. Some of this sludge is recycled to the inlet of the aeration tank to maintain the biomass, hence the name for process activated sludge.

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4.Disinfection Unit :

The next step for waste water treatment plants use disinfection for treatment to reduce pathogens which are micro-organisms which can pose a risk to human health.

5.Sludge Digestion :

Now again the sludge particles the water is passed through the belt filter process. The purified water is obtained by chemically treating the water coming out of the belt filter press. In which chlorine is usually dosed into the treated waste water stream for disinfection.

Conclusion: From the visit, we got the information and practical knowledge about the treatment of waste water and components used in treatment plant, process of treatment.

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VISIT TO THE FIRE STATION @ Pimpri

Abstract

Third year students of PDEA COA were taken to fire station, in order to study the topic of Fire fighting in Building Services IV.

On 22 Jan, 2020, Wednesday students visited Pimpri fire station department located at Sant Tukaram nagar, Pimpri, Pune. We left college by 11am to reach fire station on private vehicles, we reached fire station at 12 noon after covering a route of 7.4 km.

Along with 24 students of T.Y.B.Arch subject faculties Ar. Arun Sohani and Ar. Prachi Agrawal were present at fire station.

Our day at fire station started with a detail explanatory session which was hosted by Mr. Chavan sir (HOD). He explained the whole process of fire fighting with important rules and regulations of building safety norms. This interactive session ended and students headed to parking area where fire departments vehicles were parked. Physical demonstration of how they conduct their drills, and what can be an obstacle in a building which restricts this vehicle to reach at fire.

This informative visit helped students to learn the fire safety and protection system in more impactive way. By 2pm we left the fire premises after greeting all the fire department staff.

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Detail about the session:

Mr. Chavan sir who is head of department of Pimpri fire station explained some important norms and regulations during their lecture.

He started with the norms of side margin between compound wall and building for Fire prevention

- For 15-metre-high building side margin (drive way) should be 6 metre minimum.
- While on turnings drive way should be of 9 metres. Ramp of podium should be 6 metre wide.
- The drive way offset should not consider the projections of building i.e. It should be minimum 6
- metres away from the outer most projection.
- Driveway to the basement should be 6.5 metres.If the length of the building is more than 15 metres;
- two staircases should be provided.
- Sprinkler system should be provided in residential
- and commercial building in order to prevent fire.
- Every building should be provided with two extra
- pumps for safety.
- Primary hose ring should be 20 metres in length
- minimum and 30 metre maximum.
- Nozzle diameter 19 mm shoots water up to 7 metre
- For cold regions dry sprinkler are used.
- Fire resistant door should resist fire for 2 hrs
- minimum.
- Building more than 24 metres in height should have refuse area on every 5 th or 6 th
- floor.
- Domestic water tank should be underground.

Conclusion

This informative tour by PDEACOA helped students of to learn about norms and regulations of fire safety in building design. Live demonstration cleared all the doubts and will help students to design building according to fire norms without any difficulty. This tour gave students an opportunity to interact with fire fighter and got to know their difficulty while performing safety acts due to improper building design.

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MORAYA TEMPLE SITE VISIT REPORT

11 Students of 1st year PDEA Along with the two Teaching faculties were taken to the Moraya Temple, Akurdi, Pune on 5th Feb 2020.

This temple is built in the typical Wada architecture style and boasts of intricate wooden carvings from the Peshwa era.

Aim :

The aim of this site visit is to aid students to acquire knowledge of timber structures.

Objectives :

To study timber staircase and its supporting members.

To make students understand timber columns, beams and their junctions.

Timber carvings and detailing.



Conclusion :

Study was successfully conducted which helps the students to learn more with practical exposure.

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BUILDING TECHNOLOGY AND MATERIALS WORKSHOP

RCC SLAB AND STAIRCASE MODELS WORKSHOP

12th February 2020

- A one day workshop was conducted by Ar. Amey Naphade on RCC Slabs and Staircase models.Under the guidance of Ar. Arun Sohani.
- Live RCC models were made by the students as explained by **Ar. Amey Naphade**.
- The workshop was conducted for 2nd year Students, 40 Students attended the workshop.
- Workshop is conducted on construction yard.

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Conclusion:

Students learnt how the staircase and Rcc Slab is casted on site from designing to marking on site ,scaffolding ,steel detailing and concreting till curing.

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WORKSHOP ON RENDERING TECHNIQUES

Aim: To encourage students to learn rendering techniques for presentation of drawings.

Brief: The workshop was under taken by Ar. Aniket Shendge which covered various aspects of rendering techniques. The pointers covered were: -

Art is a medium to express the human emotion. While art has so many mediums to express itself. It could be colors, crayons, pencils, watercolor or pen pencil and ink. Every medium has its charm to make piece of art. When art and architecture merge together it produces another work of art. Giving thought to this aspect, PDEA's COA scheduled a hands on workshop of "Rendering with Pen and Ink". To go in depth, it was a 5 days' intense workshop from 8 September 2018 to 13 September 2018.Expert was Prof.Aniket Shedge. Being an architect Prof.Shedge has keen interest in water color and ink. Students of architecture got to know about the skill that was going to enhance their project and presentation skill.

Schedule for the workshop was

Day 1- introduction of Expert followed by introduction to the material needed by the rendering. Prof.Aniket inform the students about the details. Details play an important role in rendering. He is a strong believer of "God is in the Details. "He inform the students about the different types of inks and pens. Different kinds of inks used in ancient painting.

Paper used for the rendering also plays a crucial role. Expert gave demonstration and asked students to try that on next day.

DAY 2 was all about hands on experience. Students try their luck to be as close to perfect with expert. They have to work with Charcoal Pencil.

DAY 3 Students have to practice on water color. They find it easy because only the colour and water has to be used. It was a fast rendering technique.

Day 4 was to learn about Pen and Ink. Since pen and ink was permanent medium students had to put meticulous attention to details.

Day 5 The last day was dedicated to alcohol marker rendering. Another fast rendering medium. The second half was to showcase the projects.

Workshop of Rendering with pen and ink and colors finds application in various architectural contexts:

1. Design presentations: Architectural renderings using this technique are often used in design presentations to convey the intended atmosphere, materials, and spatial qualities.
2. Marketing and promotion: Colorful and visually appealing renderings can be used for marketing purposes, such as brochures, websites, or exhibitions, to attract clients and stakeholders.

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3. Historical documentation: Pen and ink renderings are commonly employed in documenting historic architecture, capturing the character and details of significant buildings.

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REPORT ON POTTERY WORKSHOP

Day And Date: **27/10/2018, Saturday**

Organised by: PDEA'S College of Architecture.

Aim: For betterment of student's overall Technical skill & to understand the form space and volume.

Brief:

On **27/10/2018 "POTTERY WORKSHOP"** was organized in our college at 10:30 am. The main aim of the workshop was to enhance Technical Skill.It is taken under Basic Design .It is taken to understand the form space and volumes. Its compulsory for all students to attend the students

Photographs of Workshop

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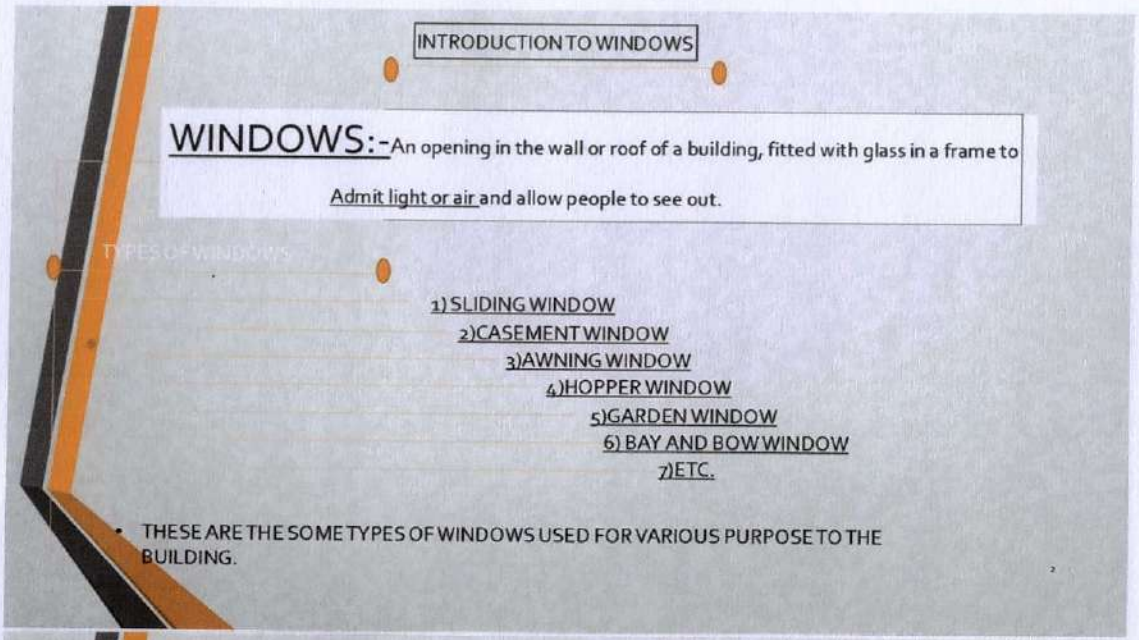
Market Survey On Non-Timber Window

This market survey aims to gather information on the demand, trends, and preferences related to non-timber windows. Non-timber windows are an alternative to traditional wooden windows and are typically made from materials such as aluminum, uPVC (unplasticized polyvinyl chloride), fiberglass, or composite materials.



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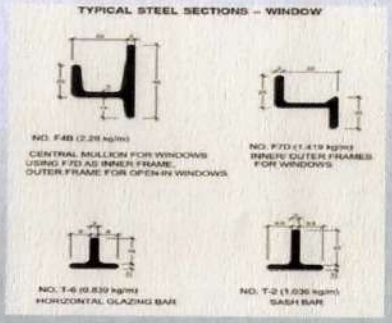
STEEL WINDOWS

- STEEL is a very strong material, which allows steel windows to have the thinnest possible frames of all materials.
- Steel is very excellent material for windows.
- It does not warp, expand or shrink in the presence of moisture, as wood does.
- steel is easily available material in the market.
- The sections of steel windows are jointed by welding work.
- Steel windows are made of :-
  1) Coupling
  2) Glazing bed
  3) Holdfast
  4) Jambs
  5) Putty Bedding
  6) Handel
  7) Etc,
- The steel window sections are available in
- L,T-section and Z-section.



4

ADVANTAGES & DISADVANTAGES OF STEEL WINDOW

ADVANTAGES:-

- Steel is a strong material, the sightlines on steel windows are quite thin.
- Steel windows don't need much maintenance
- Steel windows reduces heating and cooling cost because it contains insulating properties.
- Steel windows are fire resistant.
- Steel windows are easily available in the market.

DISADVANTAGES:-

- Steel windows may get corroded in contact with moisture
- Steel windows are expensive.
- Steel windows are heavy and we can't done our work at the site because it's corners and sections are attached by welding so it difficult to work on sight.
- Steel windows are good conductor of heat, so steel windows must have thermal breaks put in.

5

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Rates of the material for steel windows are differs as per quality and the types of sections gets change.

Generally the rates of steel sections are in between 44.00₹ To 55.00₹/kg.

RATES AND MARKET FORMS

- Steel windows are available in the sections form in the market.
- The sections available in the markets are
  1) L- section
  2) T- section
  3) Z- section
- The sections of steel windows are available in different sizes i.e T-Section is available in overall dimensions of 20 x 20 x 3mm x 6m and 25 x 25 x 3mm x 6m
  Z-section available in dimensions of 20 x 20 x 25mm by 6m and 25 x 25 x 3mm by 6m.

6

UNIT- 6

FLOORING MATERIAL AND FLOOR FINISHES - CERAMIC TILES

BUILDING CONSTRUCTION AND MATERIALS-III

NAME:- ABHISHEK DATTATRAY MOHALKAR CLASS:- S.Y B.ARCH ROLL NO 2019109

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FLOORING MATERIAL- CERAMIC TILES	
MATERIAL	CERAMIC IS METALLIC OR NON METALLIC OXIDESCARBIDE AND NITRITE.
DURABILITY	HIGHLY TOUGH AND DURABLE.
RESISTANCE TO WATER	CERAMIC TILES ARE RESISTANCE TO WATER.GLAZED TILES ARE SLEEPARY BECAUSE SMOOTHNESS OF THE SURFACE THE UNGLAZED TILES HAVING ROUGH SURFACE AND PORES ON IT SO THAT THEY CAN ABSORB WATER IN IT. THE POROSITY OF UNGLAZED CERAMIC TILES IS 3%.
EASE OF MAINTAINANCE	NORMAL DAILY MAINTAINANCE INCLUDES SWEEPING WITH DAMP CLOTH, VACCUMING USING DUST REMOVER.
RESISTANCE TO CHEMICALS	CORROSION RESISTANCE, HOUSEHOLD CHEMICALS AND ACID RESISTANCE
SIZE AND SHAPE OF THE TILES	300X300, 450X450, 600X600 THESE ARE COMMON AND EASILY AVAILABLE SIZES IN MARKET. TILES ARE SQUARE AND RECTANGULAR IN SHAPE.
FUNCTIONALITY	PROVIDES GOOD SURFACE FOR WALKING OR AS WELL AS USED FOR WALL.
HUMAN COMFORT	THEY EASILY BEAR THE LOAD OF HUMAN AND FURNITURE

NAME:- ABHISHEK DATTATRAY MOHALKAR CLASS:- S.Y B.ARCH ROLL NO 2019109

FLOORING MATERIAL- CERAMIC TILES	
ATTRACTIVNESS	CREAMIC TILES ARE ATTRACTIVE AND DECORATIVE.
EFFECT OF TEMPERATURE VARIATION	CERAMIC TILES ARE HEAT RESISTANCE AND THERE IS NO EFFECT OF VARIATION TEMPERATURE ON IT.
WEATHER EFFECTS	THERE IS NO EFFECT OF WEATHER ON THE CERAMIC TILES.
INDOOR AND OUTDOOR USES	GENERALLY IT IS USED IN BATHROOMS , KITCHEN, BEDROOMS
EFFECT ON ENVIRONMENT	THERE IS NO EFFECT ON ENVIRONMENT ,CERAMICS IS MADE USING 100% PLENTIFUL. THEY ARE MADE USING CLAY FELDSPAR AND QUARTZ.
PREPERATION OF SITE	REMOVE THE BASEBOARD AND SHOE MOLDINGS
CONSTRUCTION TECHNIQUES	- FIRSTLY INSTALL THE UNDERLAYMENT. - SPREAD THE ADHESIVE WITH SMOOTH SIDE OF THE TROWEL. MAKE SURE IT COVERS THE AREA EVENLY AND DOES NOT COVER THE REFRENCE LINE. - LIGHTLY PRESS & TWIST THE CERAMICS WHEN SETTING TO MAKE SURE THE ADHESIVE STICKS.DONT PUSH SO HARD THAT THE ADHESIVE FORCED OUT FROM UNDER THE CERAMICS. - ONCE A ROW IS IN PLACE LEVEL THE TILE WITH A RUBBER MALLER AND LEVEL. - GROUTING AND FINAL FINISHING TOUCH IS TO BE GIVEN.

NAME:- ABHISHEK DATTATRAY MOHALKAR CLASS:- S.Y B.ARCH ROLL NO 2019109

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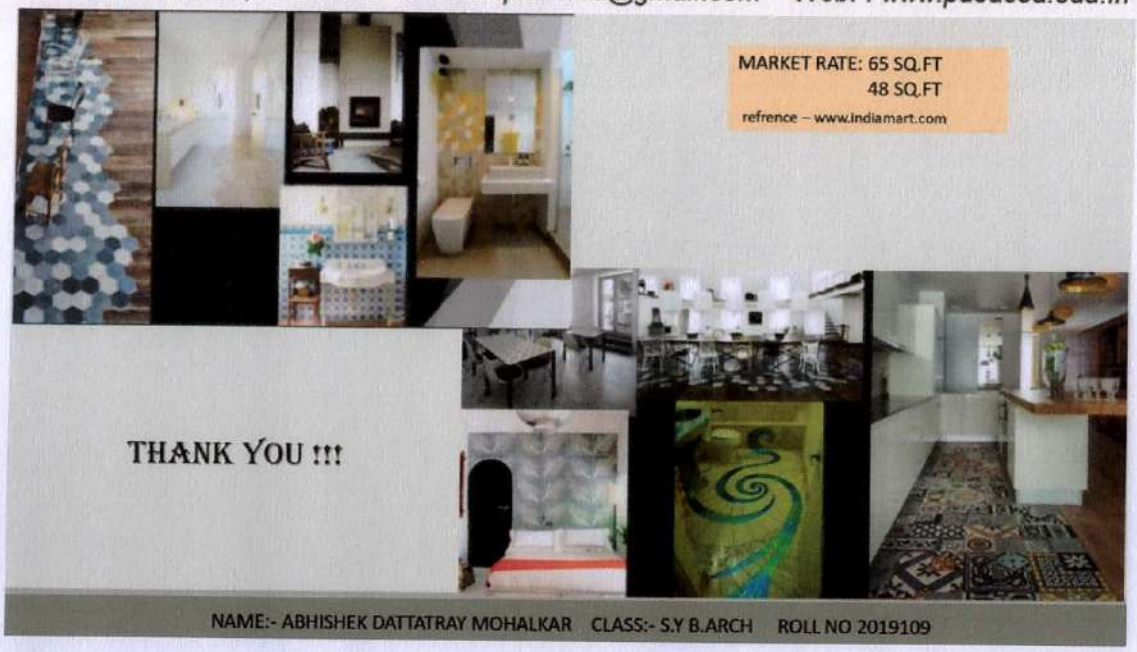

MARKET SURVEY
MATERIALS FOR INTERIOR ESSENTIALS

NAME:- ABHISHEK D MOHALKAR CLASS:- T.Y B.ARCH SUBJECT:- BCM-V ROLL NO:-109 TERM:-V

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REQUIRED MATERIALS FOR INTERIOR

1) WOOD AND WOODEN DERIVATIVES
- PLYWOOD
- LAMINATE
- VENEER

2) HARDWARES
- DOOR HANDLES
- HINGES
- DOOR LOCKS
- KITCHEN TROLLEY
- CHANNELS

3) PAINTS AND VARNISHES

INTRODUCTION

AS PER PREVIOUSLY MENTIONED FOR THE MATERIAL STUDY AND ANALYSIS OF MARKET FORMS AND MARKET RATES OF THE ESSENTIAL MATERALS FOR INTERIORS THE FOLLOWING DATA HAS STUDIED, IN LOCAL MARKET OF BHOOM TQ. DIST OSMANABAD.

SHOPS VISITED ON 06 AUGUST 2021

1) DOKE PLY AND HARDWARES

IN THIS SHOP ALL THE MATERIAL RELATED TO INTERIOR I.E REQUIRED FOR THE FURNITURE AND HARDWARES IS AVAILABLE. WHERE I GET MORE ENOUGH INFORMATION ABOUT WOOEN DERIVATIVES THEIR FORMS AND THEIR RATES. OWNER OF THE DOKE PLY & HARDWARE MR. SUMIT DOKE AND SHOPKEEPER MR. ARUN GAWALI THEY HELPED ME ALOT FOR PROVIDING INFORMATION ABOUT THESE MATERIALS.

2) BALAJI PAINTS

MR. BALAJI MALI OWNER OF THIS SHOP GAVE ME THE INFORMATION ABOUT PAITS AND VARNISHES AND THEIR RATES.

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WOODEN DERIVATIVES

PLYWOOD

PLYWOOD BANDS AVAILABLE

Greenply

WoodStar

Quality leadership since 1945 WIP

OCM BIRLA GROUP
Black Diamond
Feel The Brand Luxury

WOODEN DERIVATIVES

PLYWOOD

USES OF PLYWOOD
- KITCHEN CABINET
- PARTITION
- DOORS
- FURNITURE
- PANNELING

MARKET FORM OF THE PLYWOOD
- IN MARKET IS AVAILABLE IN THE FORM OF SHEET 8'X4' FEET
- AS PER NEED ALSO GET REQUIRED PIECE OF SIZES.

QUALITIES OF PLYWOOD
- FIRE RESISTANT
- BORER AND FUNGUS FREE
- ANTI TERMITE
- MOISTURE RESISTANT

THICKNESS AVAILABLE
- THE THICKNESS OF THE PLYWOOD AVAILABLE FROM 4 MM TO 25 MM
- 12MM,16MM AND 18MM THICK PLYWOOD ARE MOST COMMON USED

RATE:-
12 MM- 40 SQ.FT
18 MM- 58 SQ. FT

RATE:-
12 MM- 45 SQ.FT
18 MM- 68 SQ. FT

RATE:-
12 MM- 55 SQ.FT
18 MM- 78 SQ. FT

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WOODEN DERIVATIVES

LAMINATES

USES OF LAMINATES
- TO COVER ROUGH SURFACE OF PLYWOOD/DOORS, PANELS, CABINETS, PARTITIONS,
- TO GIVE TEXTURED EFFECT
- TO HIGHLIGHT ANY OBJECT, ETC.

MARKET FORM OF THE LAMINATES
- IN MARKET IS AVAILABLE IN THE FORM OF SHEET 8'X4' FEET
- WE CANNOT GET PIECE OF THAT SHEET AS PER OUR SIZES WE NEED TO PURCHASE COMPLETE SHEET.
- THICKNESS OF LAMINATE SHEET IS VARIES FROM 1MM TO 8MM.
- IT IS AVAILABLE IN MANY DIFFERENT TEXTURES AND EFFECTS LIKE-GLOSSY, MAT FINISH, SOFT, WOOODEN GRAIN AND SOLID.
- TO CHOOSE DESIGN WE CAN GET CATLOG TO FINALE ITS DESIGN.

QUALITIES OF LAMINATES
- FIRE RESISTANT
- BORER AND FUNGUS FREE
- ANTI TERMITE
- MOISTURE RESISTANT
- SCRATCH PROOF LAMNATE

THICKNESS AVAILABLE
- THE THICKNESS OF THE LAMINATES AVAILABLE FROM 1MM TO 8MM .
- MOST COMMON THICKNESS IS 1MM

LAMINATE BRANDS AVAILABLE

CATLOG IMAGES

RATE:-
1860₹ PER SHEET

WOODEN DERIVATIVES

VENEERS

USES OF VENEERS
- TO COVER ROUGH SURFACE OF PLYWOOD/DOORS, PANELS, CABINETS, PARTITIONS, FLOOR ETC.
- TO GIVE TEXTURED EFFECT
- TO HIGHLIGHT ANY OBJECT, ETC.

MARKET FORM OF THE VENEER
- IN MARKET IS AVAILABLE IN THE FORM OF ROLL OF 2.44M X 1.22M OR
- ALSO AVAILABLE IN THE FORM OF SHEET 8'X4' FEET
- AS PER NEED ALSO GET REQUIRED PIECE OF SIZES.
- IT IS AVAILABLE IN MANY DIFFERENT TEXTURES OF WOOD AND EFFECTS LIKE-GLOSSY, MAT FINISH, SOFT, WOOODEN GRAIN AND SOLID.
- TO CHOOSE DESIGN WE CAN GET CATLOG TO FINAL ITS DESIGN.

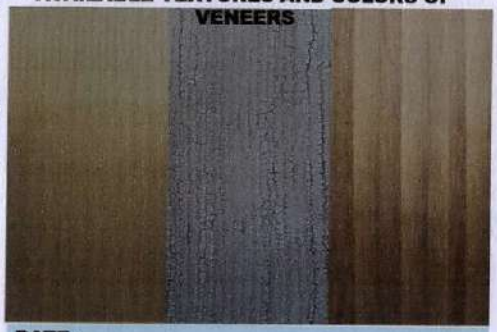
QUALITIES OF VENEERS
- FIRE RESISTANT
- BORER AND FUNGUS FREE
- ANTI TERMITE
- MOISTURE RESISTANT
- SCRATCH PROOF

THICKNESS AVAILABLE
- THE THICKNESS OF THE LAMINATES AVAILABLE FROM 0.5MM TO 8MM .
- MOST COMMON THICKNESS IS 0.5 MM ,1MM, 4 MM

VENEER BRAND AVAILABLE

Greenply

AVAILABLE TEXTURES AND COLORS OF VENEERS



RATE:-
RATES OF VEENERS VARIES AS PER THICKNESS TEXTURE AND BRAND.
110₹ SQ.FT –GREENPLY 4MM THK

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HARDWARES

DOOR HANDLES

- DOOR HANDLES AVAILABLE ARE OF LOCAL BRANDS MADE UP OF MIX METAL AND STEEL.
- 1 SET CONTAINS 2 HANDLES AND 2 ALDROPS WITH THEIR SCREWS AND BOLTS.
- ITS SIZES MAY BE VARIES AS PER DOOR .

RATE:-

1800₹	1800₹	1800₹
1800₹	450₹	450₹
2500₹	450₹	450₹

HARDWARES

HINGES

STAINLESS STEEL BUTT HINGE 6 MM THK
35₹/PIECE

STAINLESS STEEL L- HINGE 6 MM THK
90₹/PIECE

STAINLESS STEEL PARLIAMENT HINGE 3 MM THK
75₹/PIECE

STAINLESS STEEL CABINET HINGE 3 MM
900 ₹/ 2 PIECE

DOOR LOCKS

MORTICE DOOR LOCK
650₹/ 2 PIECE

EUROPA TRI BOLT DOOR LOCK
1950₹/ PIECE

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PAINTS AND VARNISHES

BRANDS AVAILABLE

TYPES OF PAINTS- 1
1) WATER BASED- EMULSION

- **EXTERIOR EMULSION**
  - ✓ APEX WEATHER PROOF- CEMENT, TILES (20 LTRS.- 2400₹)
- **INTERIOR EMULSION**
  - ✓ ROYALE –ALL INTERNAL WALLS (20 LTRS.- 9500₹)
  - ✓ APCOLITE EMULSION

2) OIL BASED PAINTS-
APCOLITE- SATIN /GLOSS ENAMELS
FOR FURNITURE STEEL/METAL OBJECTS
(1 LTRS.- 250-300₹)

VARNISHES:
300₹ /LTR
USED FOR COATING WOOD
TO GIVE SYNTHETIC LOOK.

ASIAN PAINTS COLOR WORLD MACHINE

IN THIS COLOR WORLD MACHINE WE CAN SET THE RATIO HOW MUCH QUANTITY OF COLOR IS REQUIRED. AS PER THAT THE MIXTURE IS COMING OU FROM THAT WHICH IS LATER MIX INTO THE 20 LTRS.

PAINTS AND VARNISHES

CATLOGS

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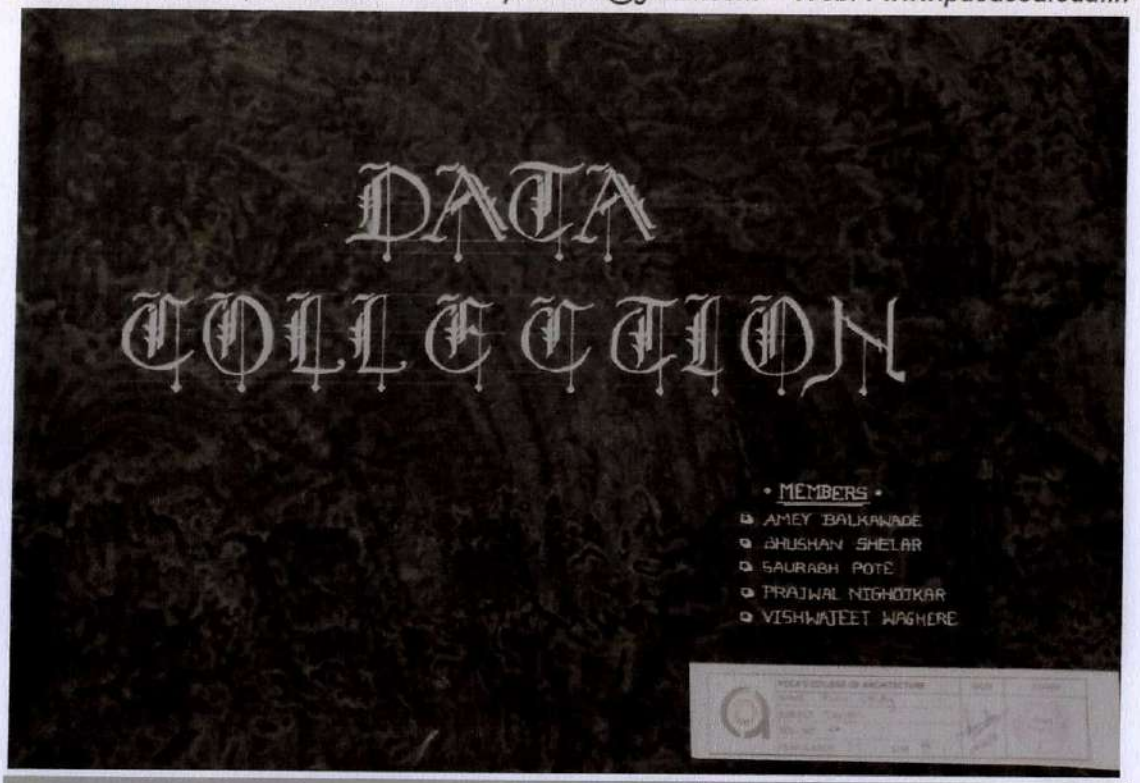

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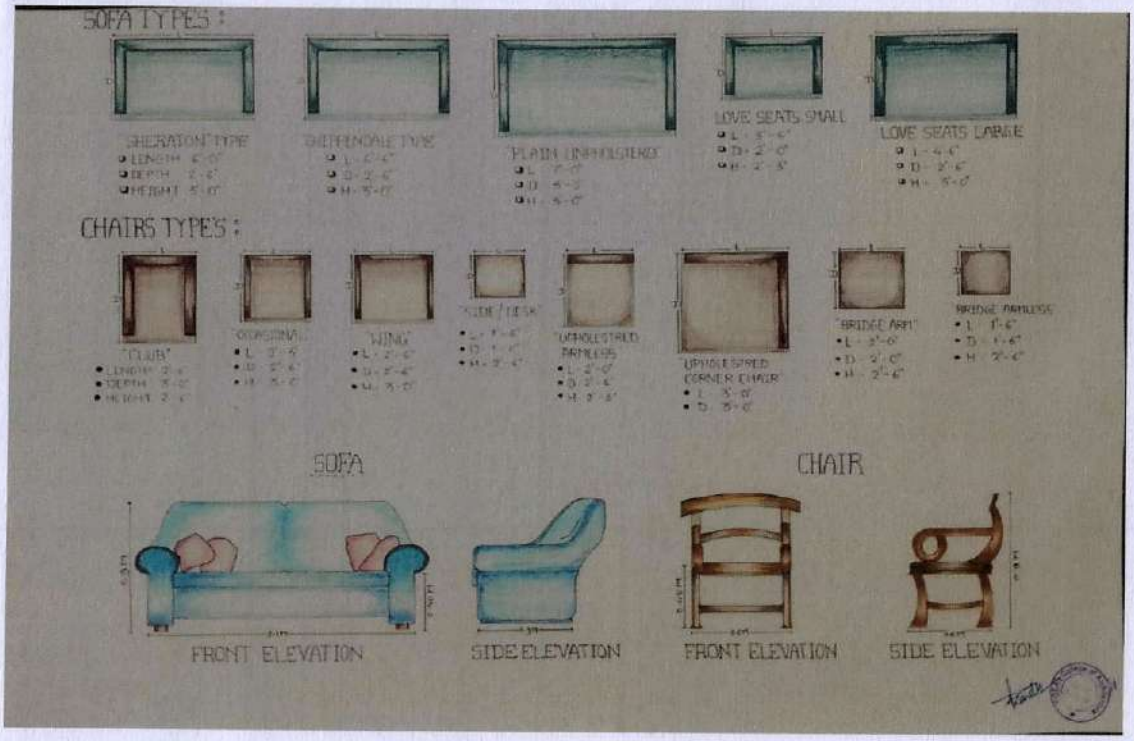

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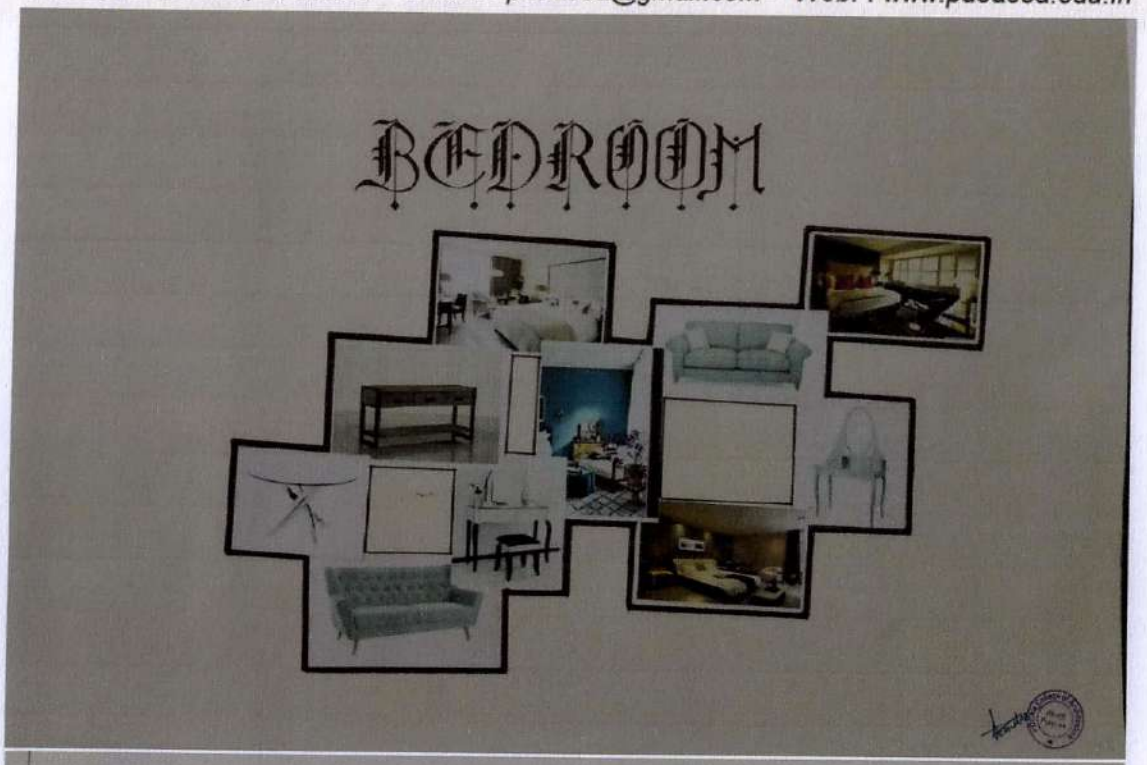

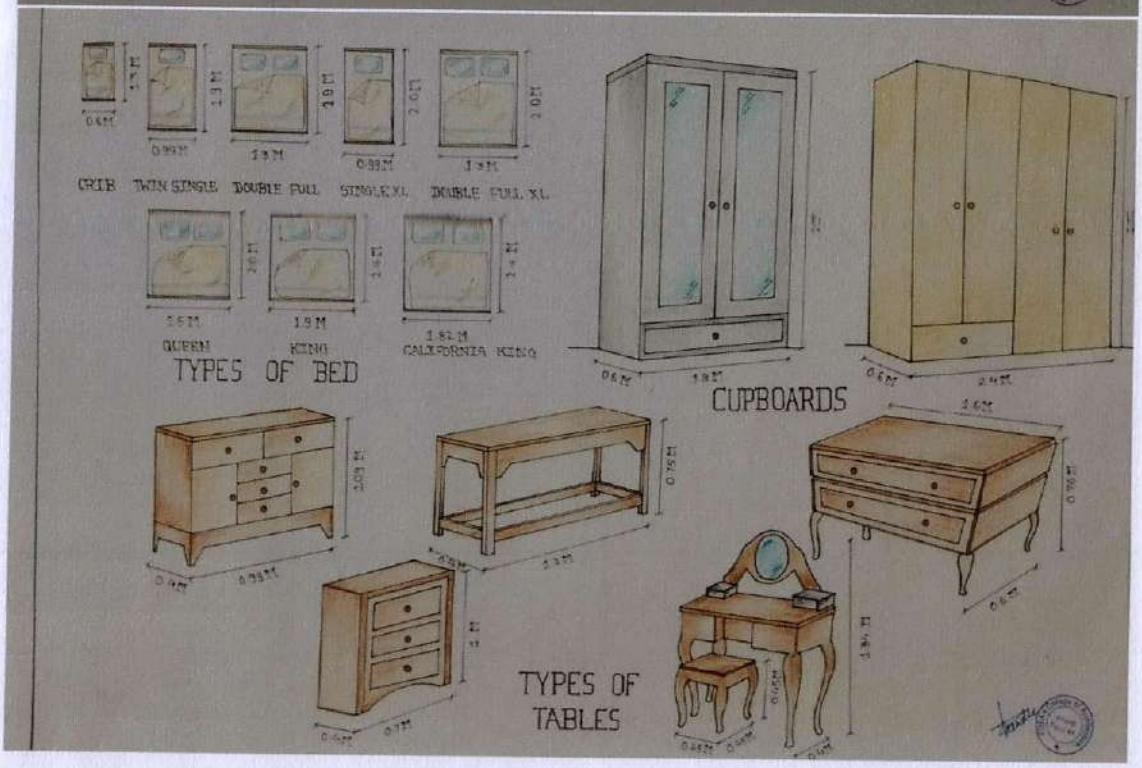

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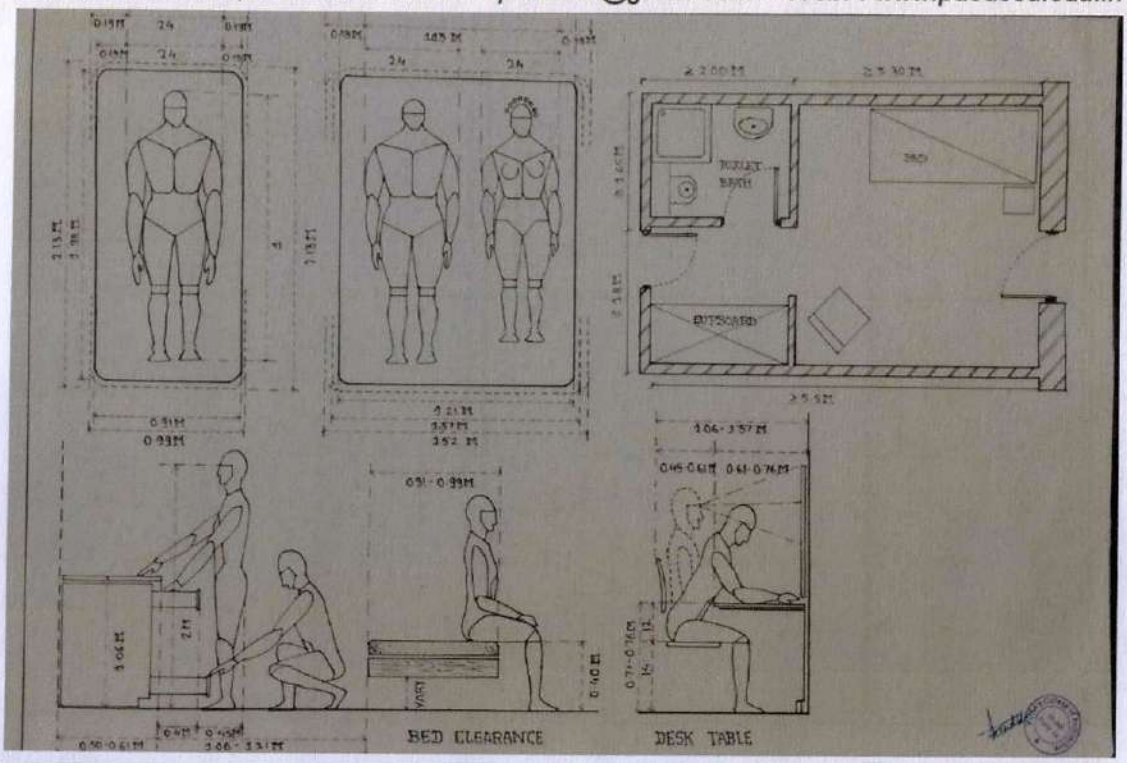

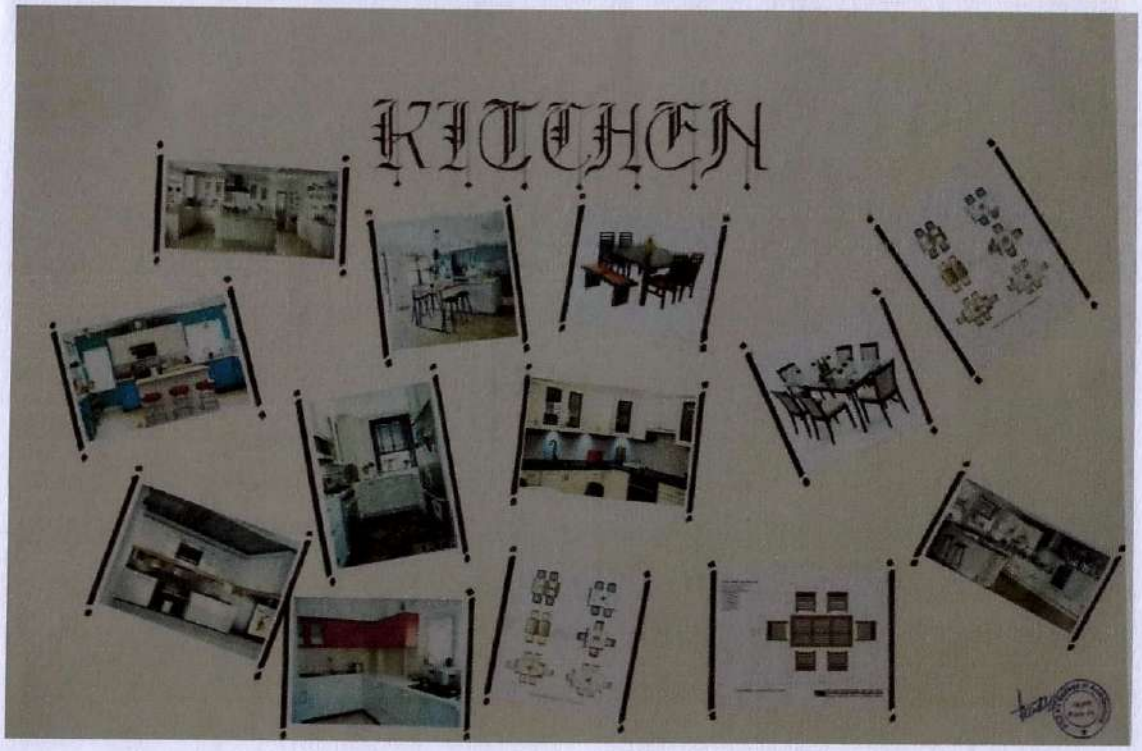

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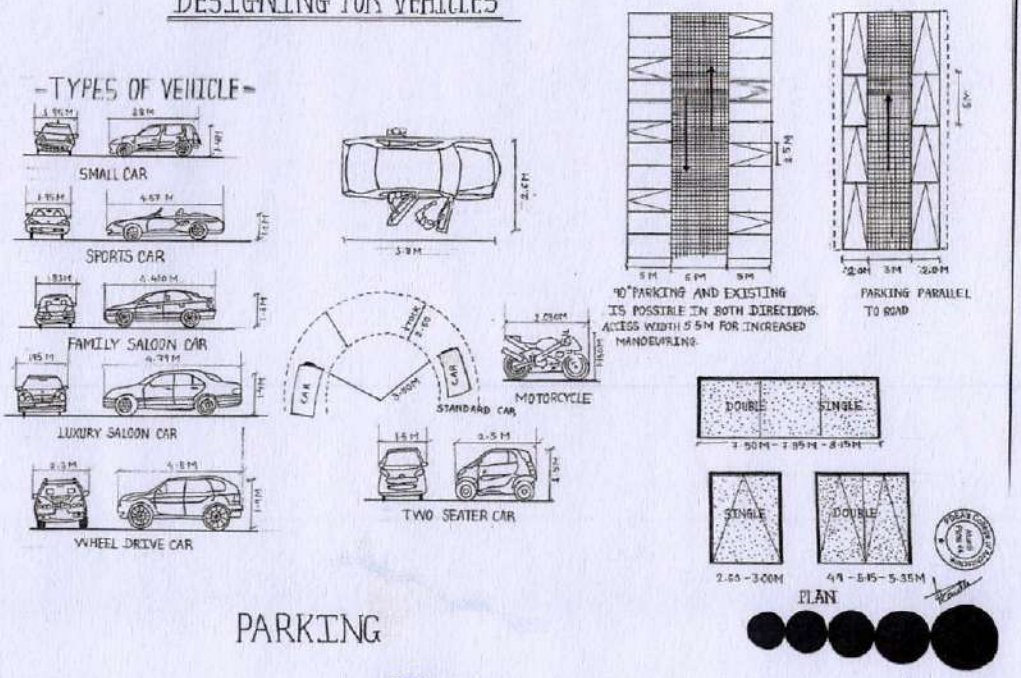
GROUP MEMBERS
SIDDHI KAMTHE.
SAYALI KHAIRNAR.
NEHA PATIL.
ANKITA KANADE.
POOJA PAKHALE.

PDEA'S COLLEGE OF ARCHITECTURE	SIGN	STAMP
NAME: POOJA PAKHALE (GSP)		
SUBJECT: DESIGN - III		
ROLL NO: 16, 9, 11, 35, 16		
YEAR B.ARCH: S-Y. SEM: II		

DESIGNING FOR VEHICLES



PARKING

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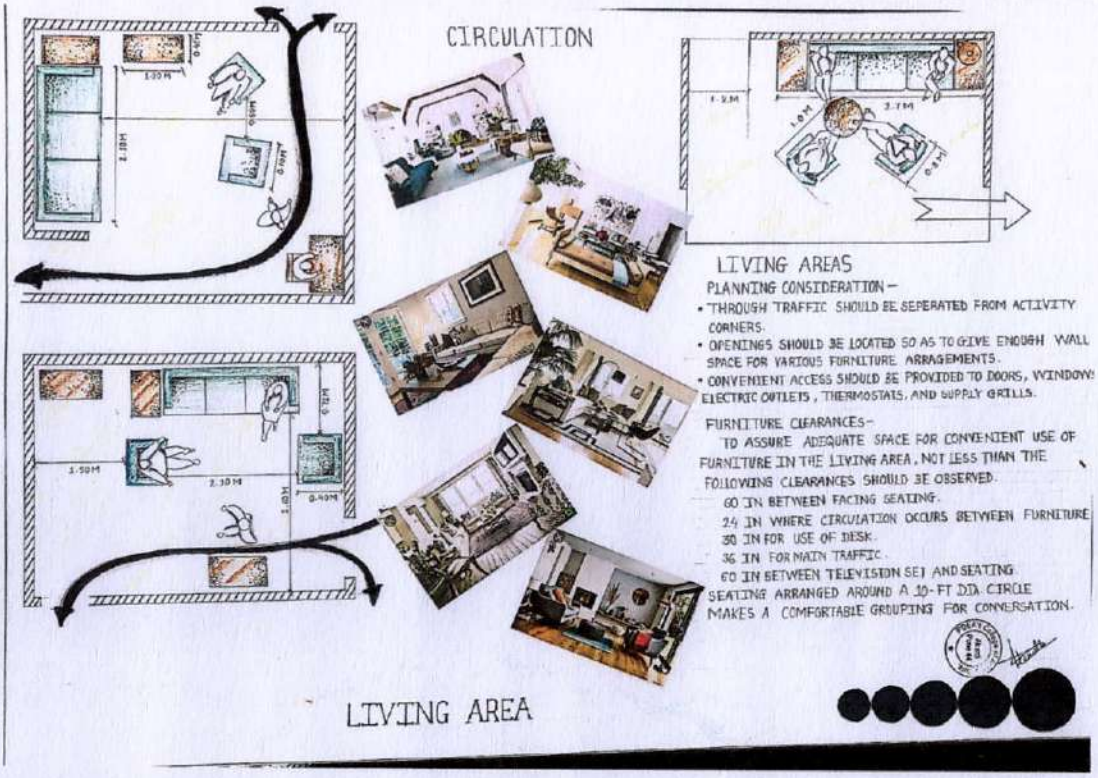

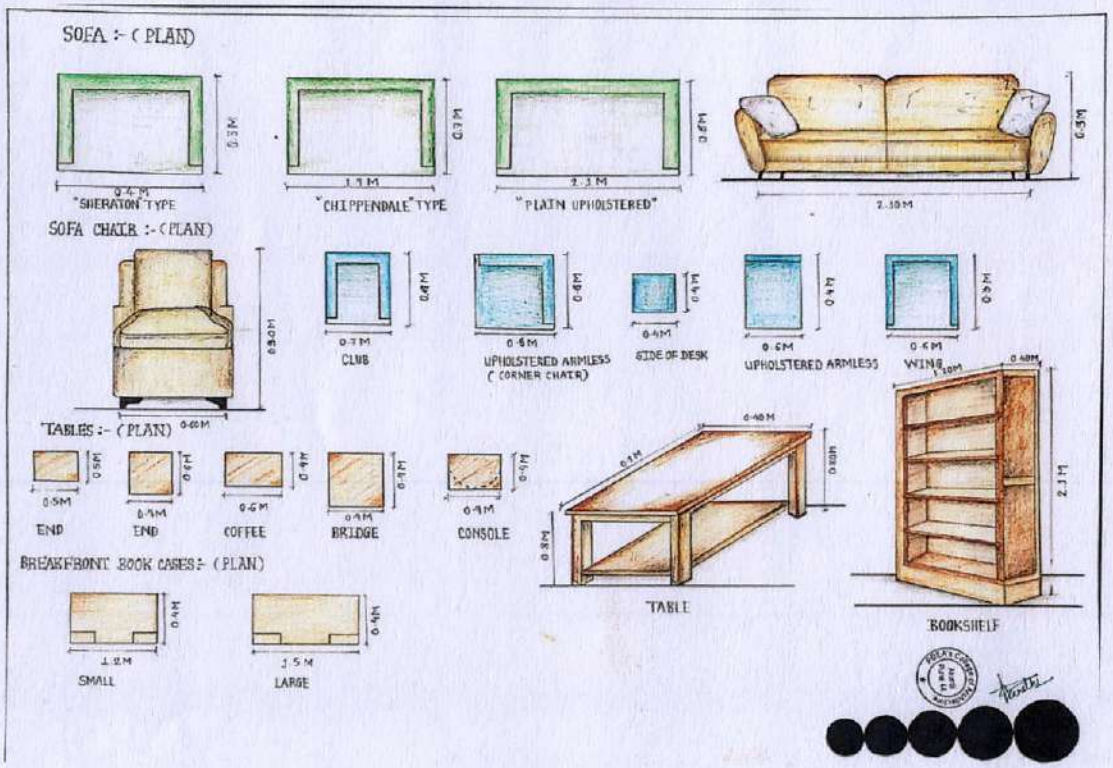

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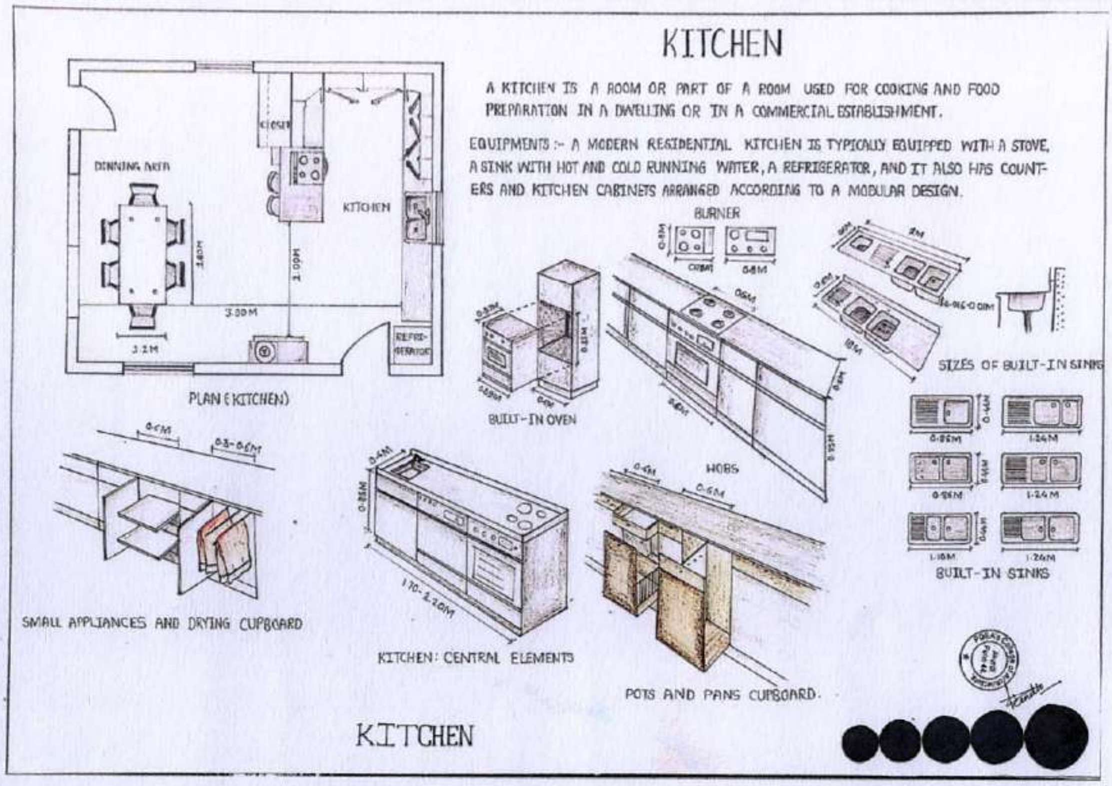

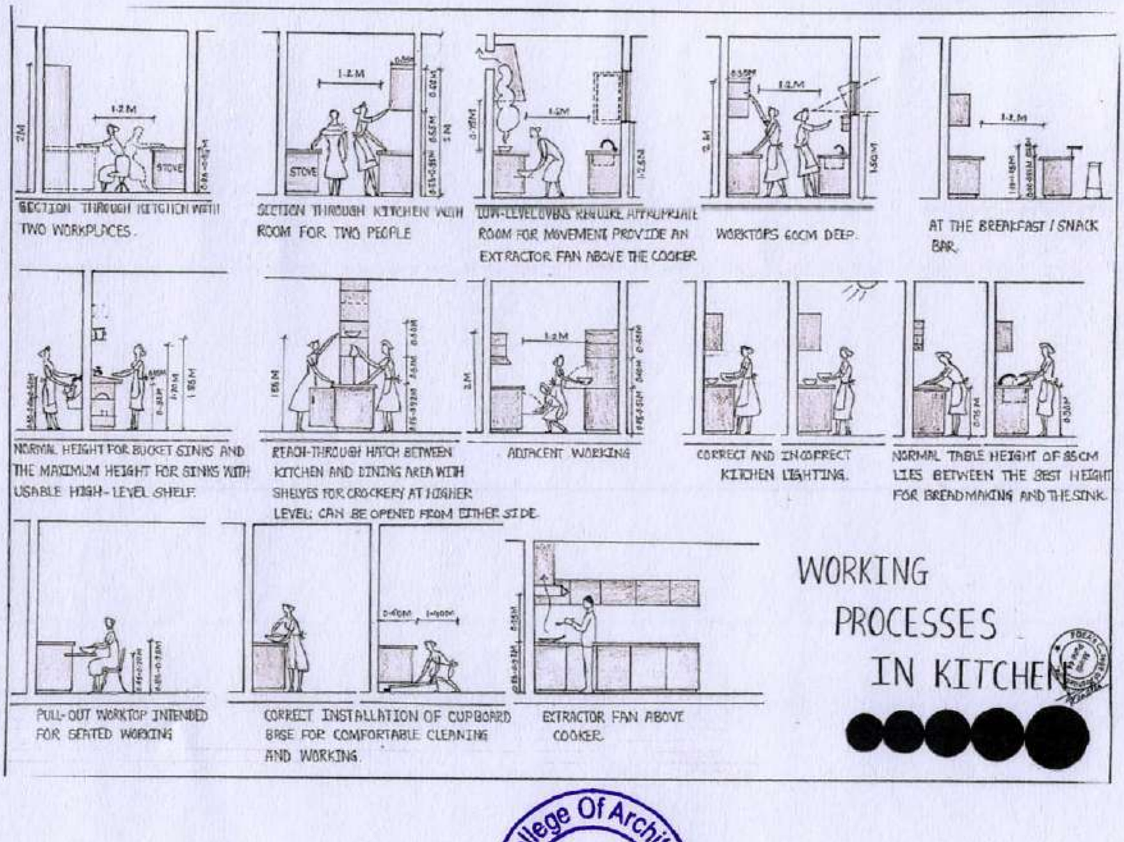

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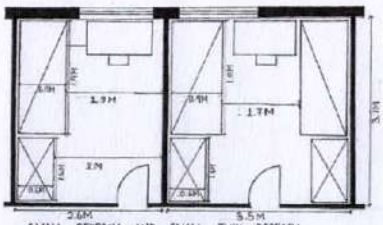
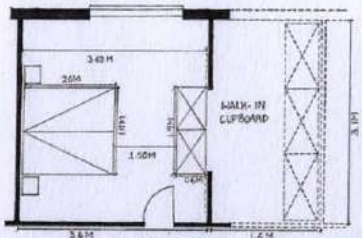


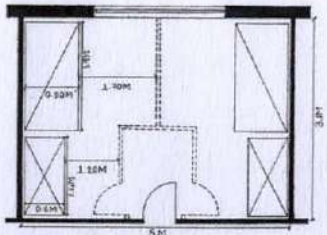
SMALL BEDROOM AND SMALL TWIN BEDROOM

FURNITURE CLEARANCES :-
TO ASSURE ADEQUATE SPACE FOR CONVENIENT USE OF FURNITURE IN THE BEDROOM, NOT LESS THAN THE FOLLOWING CLEARANCE SHOULD BE
1.066 M AT ONE SIDE OR FOOT AT BED FOR DRESSING 0.1524 M BETWEEN SIDE OF BED AND SIDE OF DRESSER
0.91 M IN FRONT OF DRESSER, CLOSET AND CHEST OF DRAWERS.
0.60 M FOR MAJOR CIRCULATION PATH (DOOR TO CLOSET, ETC)
0.55 M ON ONE SIDE OF BED FOR CIRCULATION.

FURNITURE ARRANGEMENT:-
THE LOCATION OF DOORS AND WINDOWS SHOULD PERMIT ALTERNATE FURNITURE ARRANGEMENTS.



BEDROOM WITH WALK-IN CUPBOARD EXTENSION

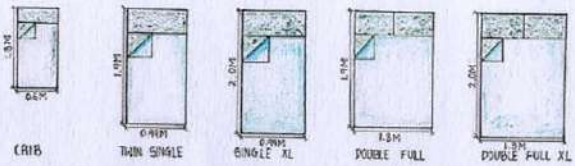


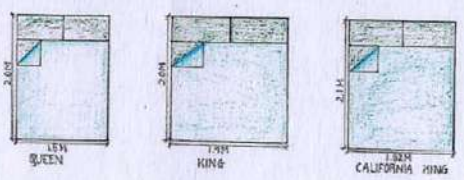
TWIN BEDROOM

BEDROOMS WITH MINIMAL SPACE OF APPROX. 13 m² CAS PARENT'S ROOM OR TWIN BEDROOM) AND APPROX. 8m² (SINGLE ROOM). THESE WOULD NORMALLY BE ALIGNED TO EAST OR SOUTHEAST OR SOUTH TO WEST AND SEPARATED FROM THE LIVING ROOM IN ANOTHER PART OF THE HOME.

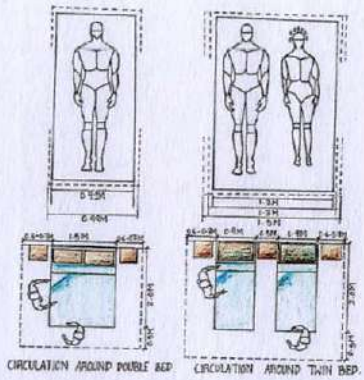
THE OPTIONS FOR A GENEROUS TWIN BEDROOM OF 16.5m², WHICH COULD BE PARTITIONED.

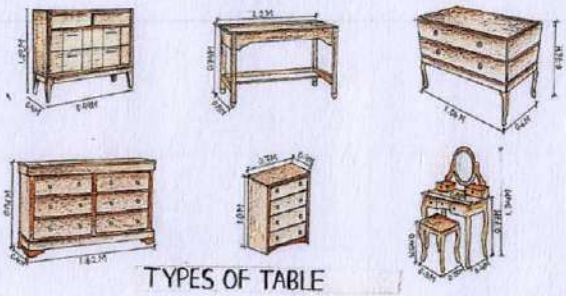
BEDROOM

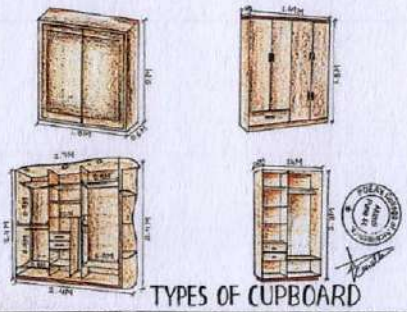




TYPES OF BED




TYPES OF TABLE


TYPES OF CUPBOARD

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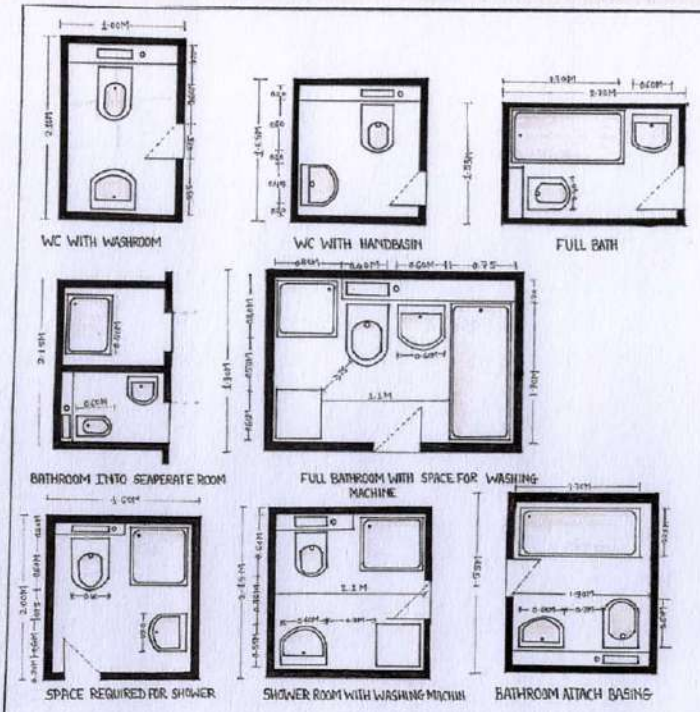


BATHROOM

DEFINITION:-

A BATHROOM IS DEFIND AS AN INDEPENDENT ROOM WITH BATH/SHOWER AND TOILET AND, ACCORDING TO BUILDING REGULATIONS, BELONGS TO THE MINIMUM EQUIPMENT OF A FLAT OR HOUSE. IN LARGER HOUSES, BATH AND WC SHOULD BE IN SEPERATE ROOMS OR AN ADDITIONAL WC (GUEST WC) SHOULD BE PROVIDED. THE BATHROOM SHOULD BE ORIENTED TO THE NORTH, AND IF POSSIBLE HAVE NATURAL VENTILATION AND LIGHTING.

VENTILATION:-

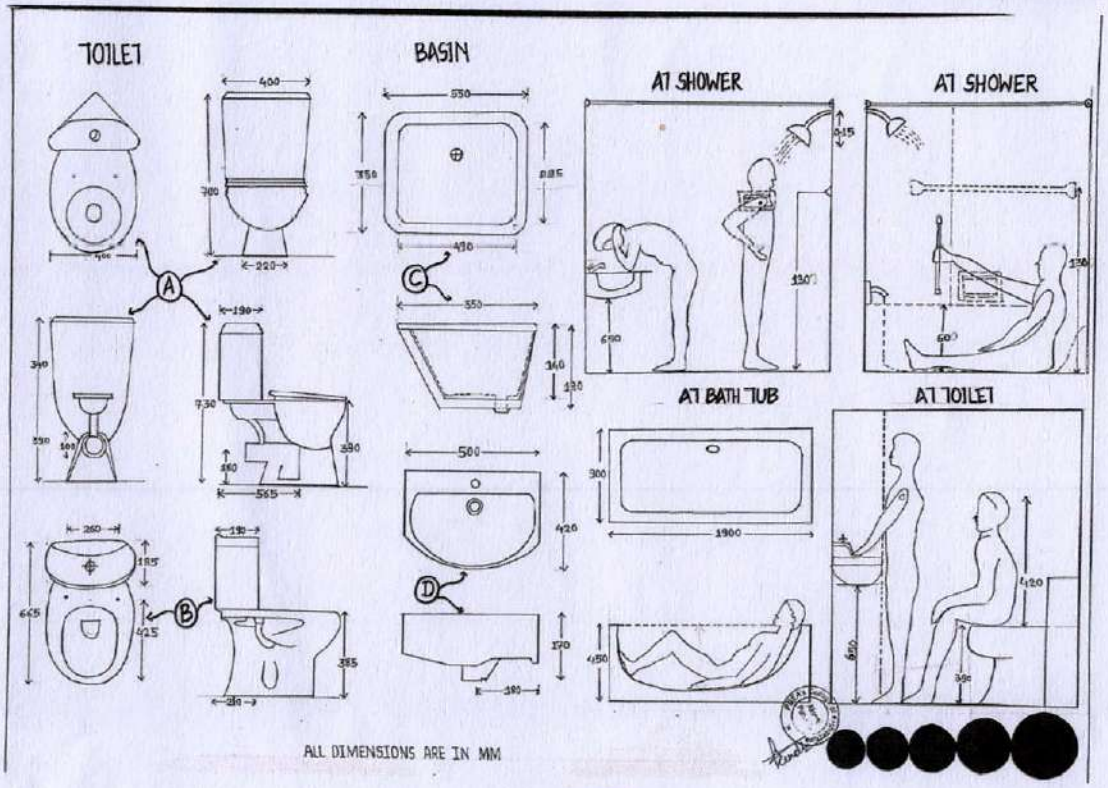
GOOD VENTILATION IS ESSENTIAL IN BATHROOMS BOTH TO REDUCE HUMIDITY AND TO DISPEL ODOUR.

SOUND CONTROL:-

ACOUSTICAL TILES FOR USE IN THE BATHROOM SHOULD BE MOISTURE RESISTANCE AND EASILY CLEANED.

MATERIAL:-

IT IS ESSENTIAL THAT ALL SURFACE MATERIAL USED IN THE BATHROOM HAVE MOISTURE RESISTANT FINISHES.



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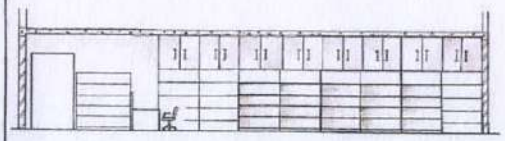
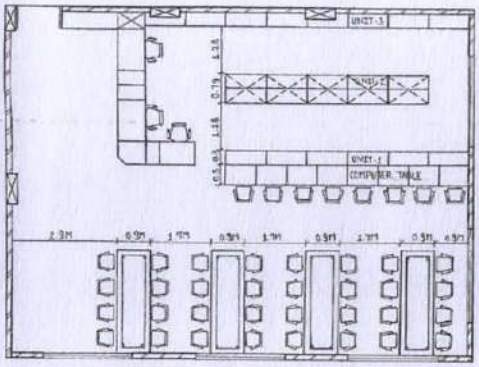
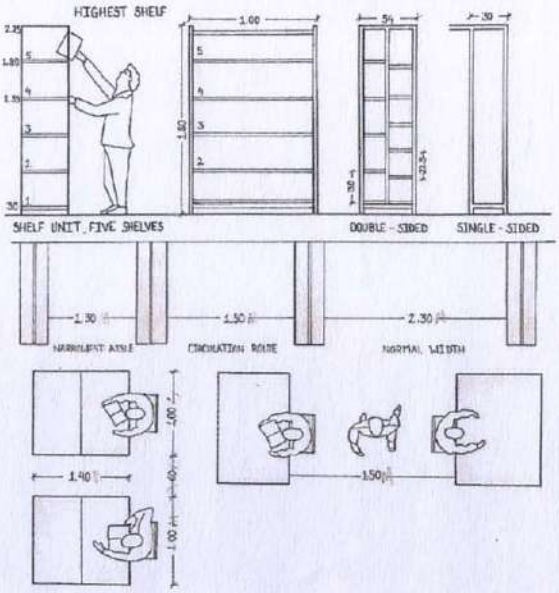
LIBRARY

A LIBRARY IS A COLLECTION OF SOURCES OF INFORMATION AND SIMILAR RESOURCES. MADE ACCESSIBLE TO A DEFIN COMMUNITY FOR REFERANCE OR BROWSING OR BORROWING.







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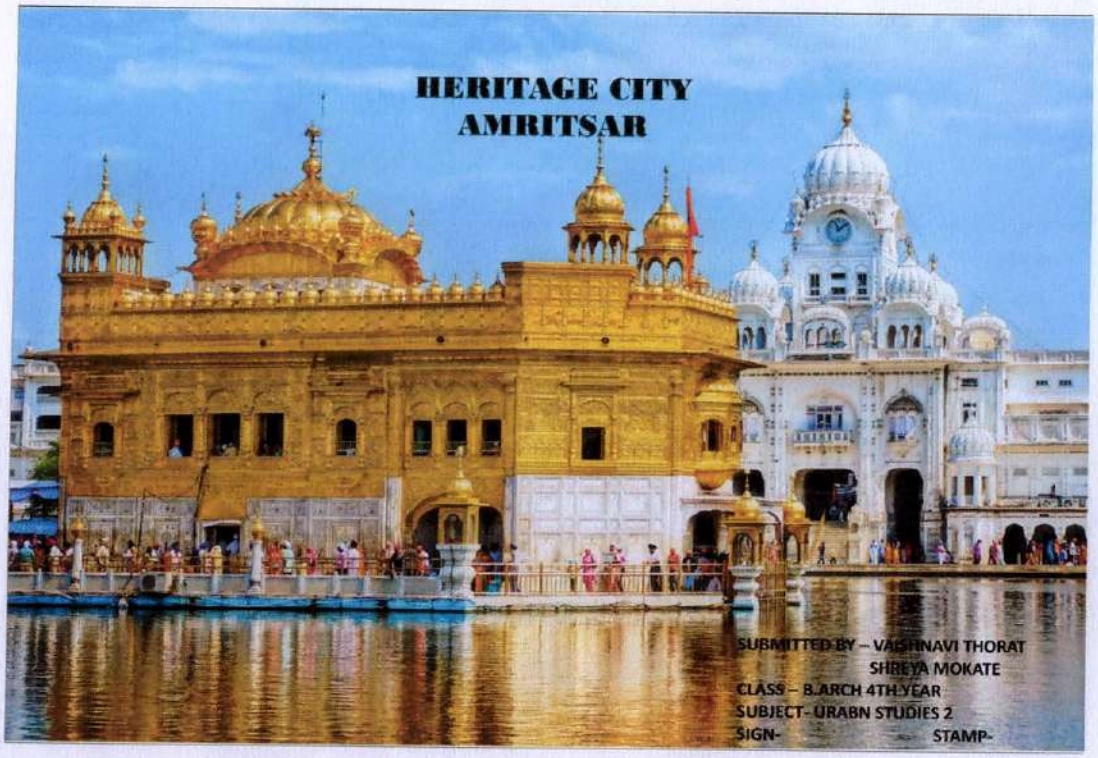

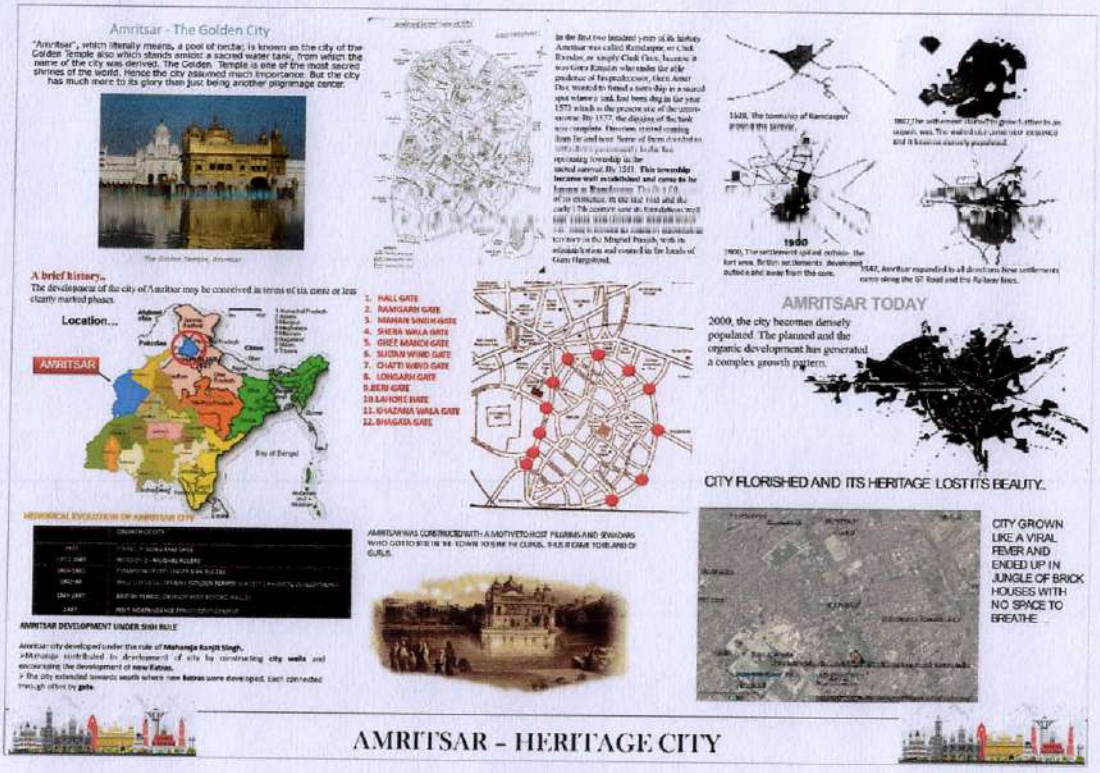

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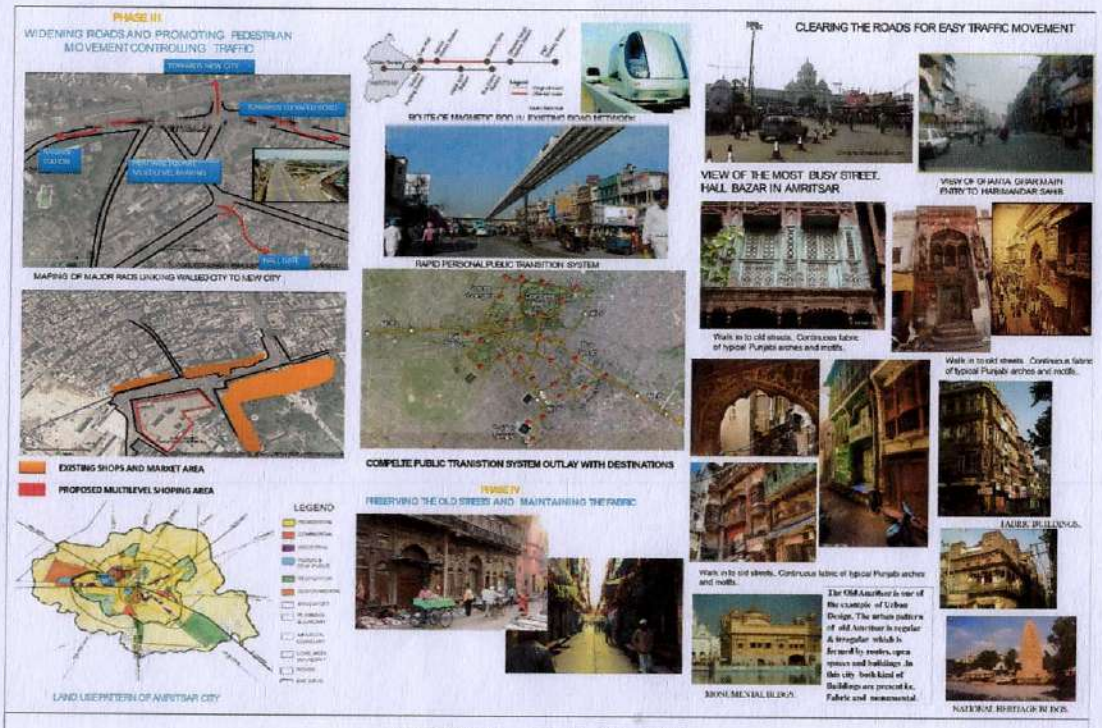
AMRITSAR – HERITAGE CITY



AMRITSAR – HERITAGE CITY

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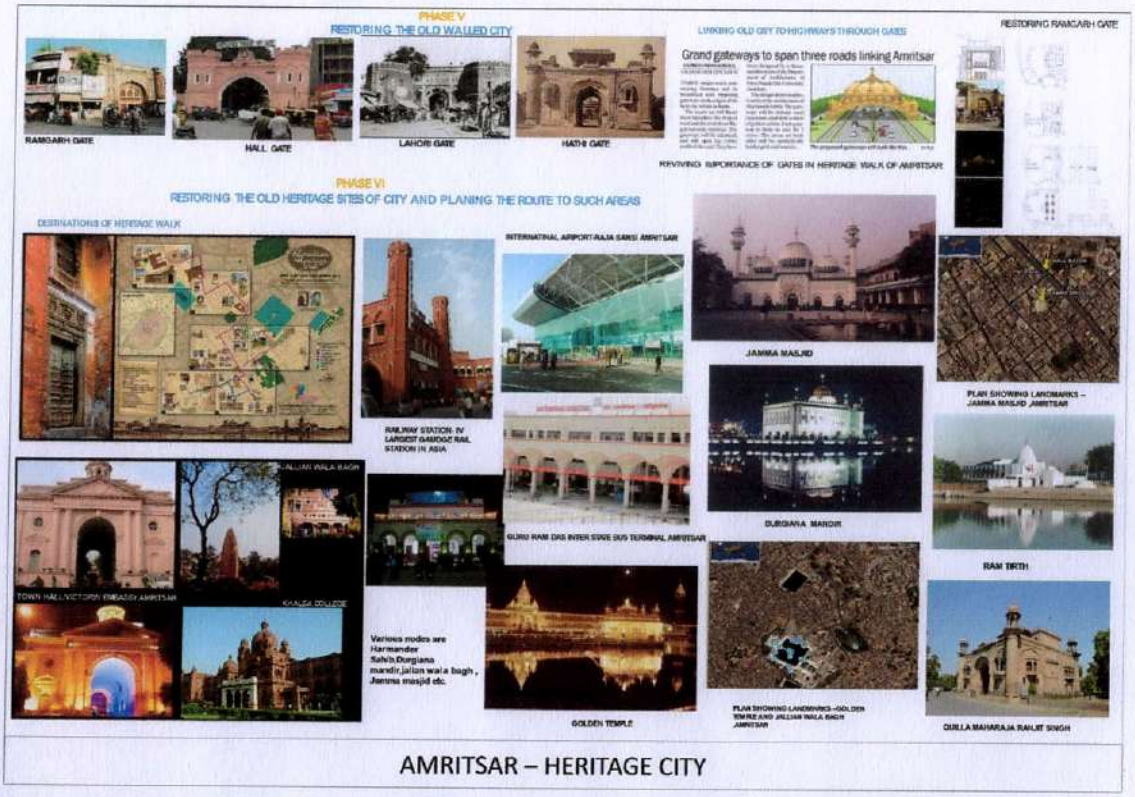
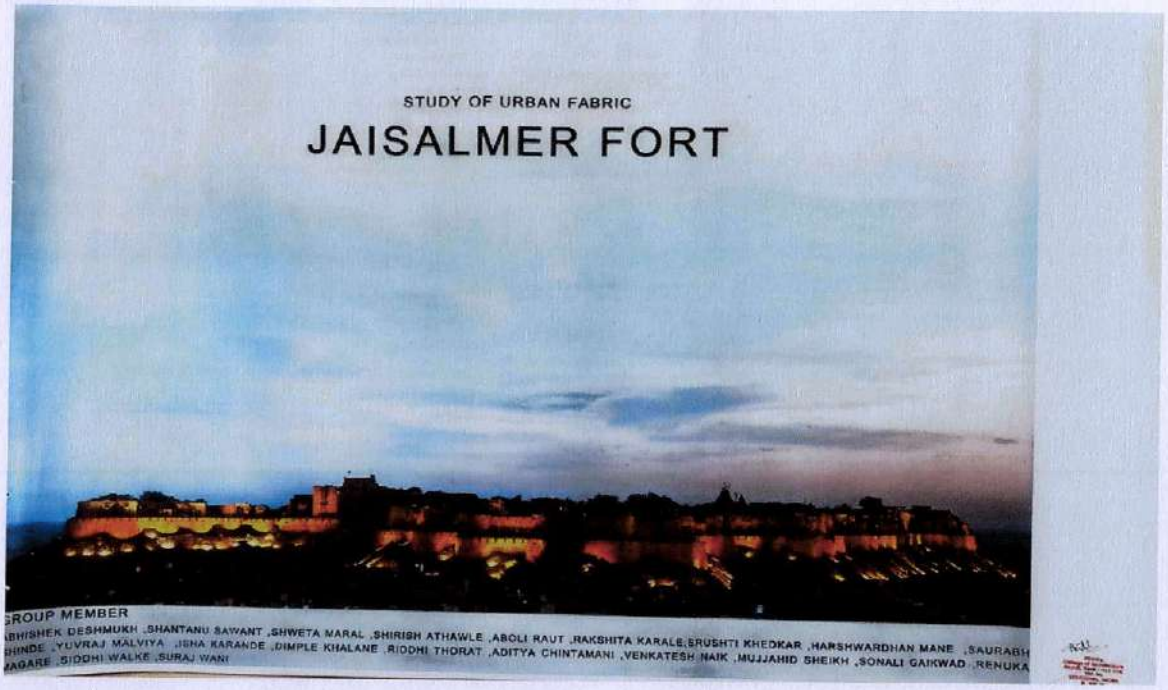


AMRITSAR – HERITAGE CITY



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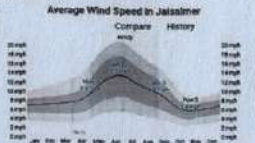
INTRODUCTION

AVERAGE CLIMATE OF JAISALMER

AVERAGE WIND SPEED

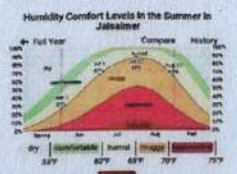
AVERAGE WIND SPEED



The average of mean hourly wind speeds (dark gray line), with 25th to 75th and 10th to 90th percentile bands.

The average rainfall (pink line) accumulated over the course of a sliding 31-day period centered on the day in question, with 25th to 75th and 10th to 90th percentile bands. The thin dotted line is the corresponding average snowfall

HUMIDITY COMFORT LEVEL



The percentage of time spent at various humidity comfort levels, categorized by dew point.

HISTORY

ARCHITECTURE

JAISALMER THE GOLDEN CITY

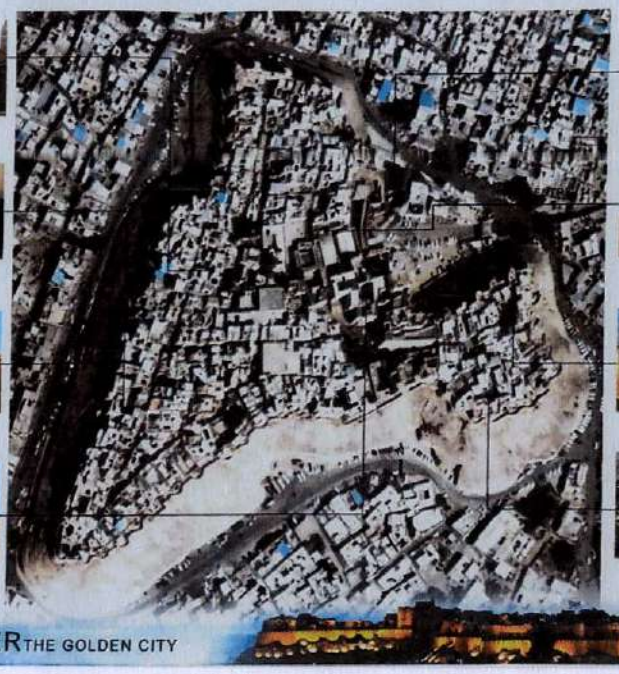
SITE MAP

LAXMI NARAYAN TEMPLE

SUN TEMPLE

JAIN TEMPLE

FORT



ENTRANCE GATE

PALACE

CITY VIEW POINT

FORT TATBANDI

JAISALMER THE GOLDEN CITY

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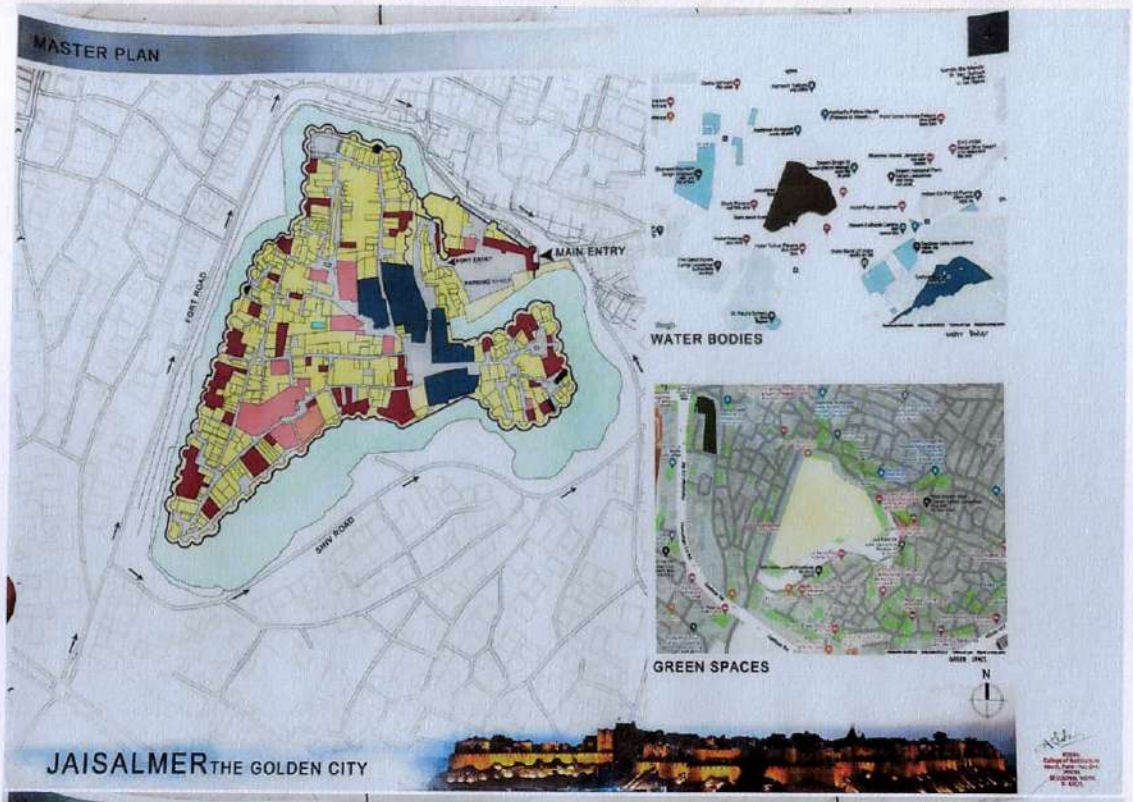

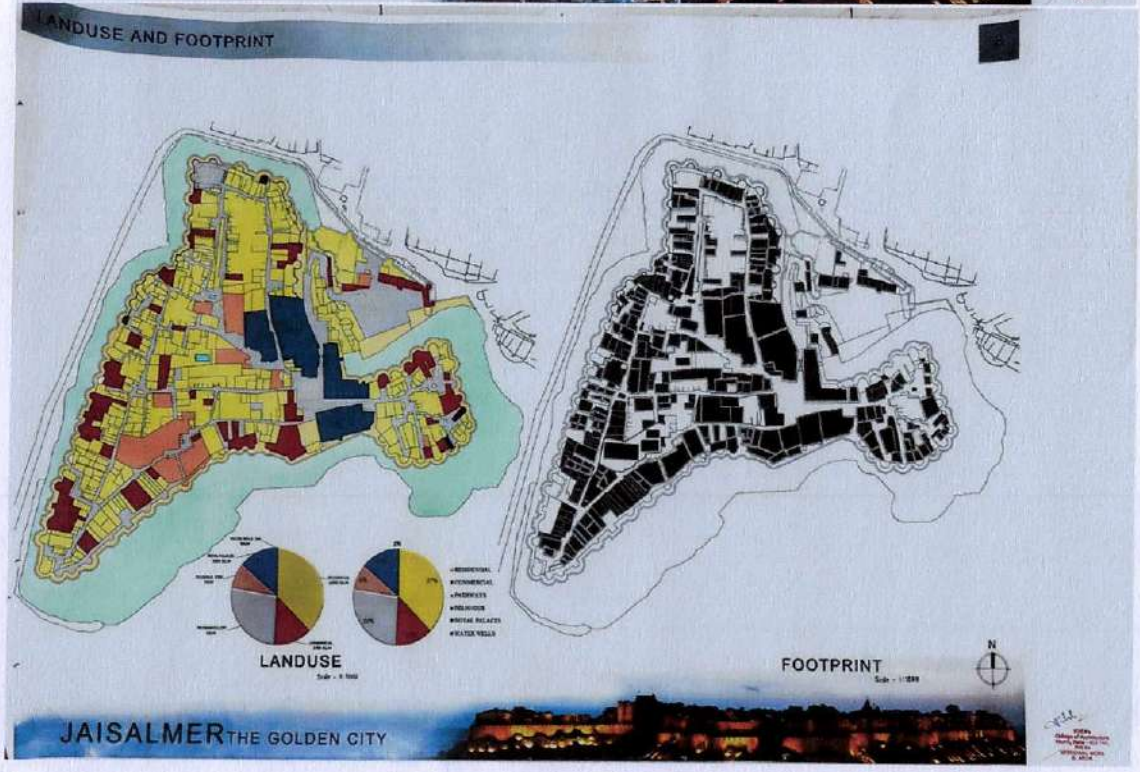

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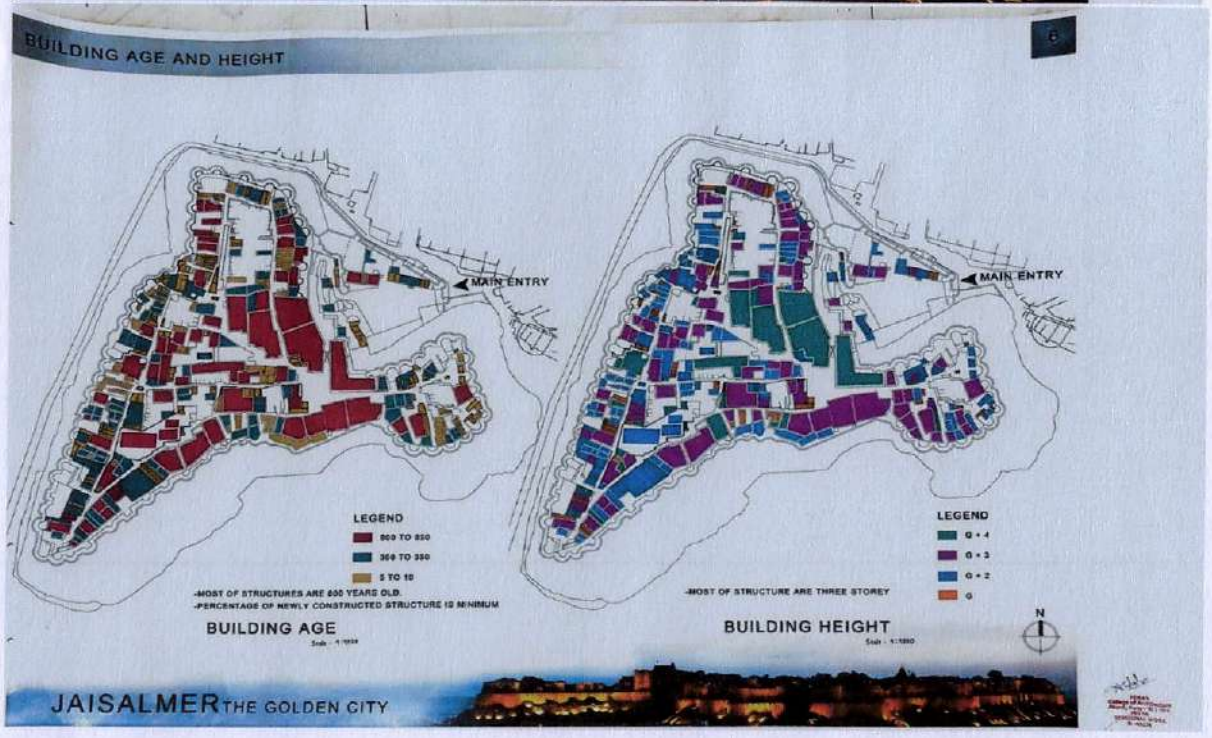

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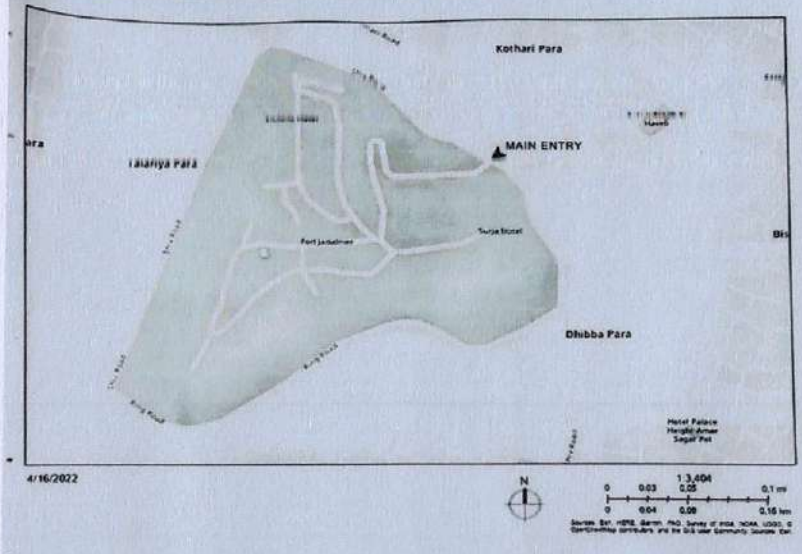
ACTIVITY MAPPING AND SKETCHES

JAISALMER THE GOLDEN CITY

TOPOGRAPHIC MAP




ENTRANCE VIEW


DUSSEHRA CHOWK


CITY POINT

JAISALMER THE GOLDEN CITY

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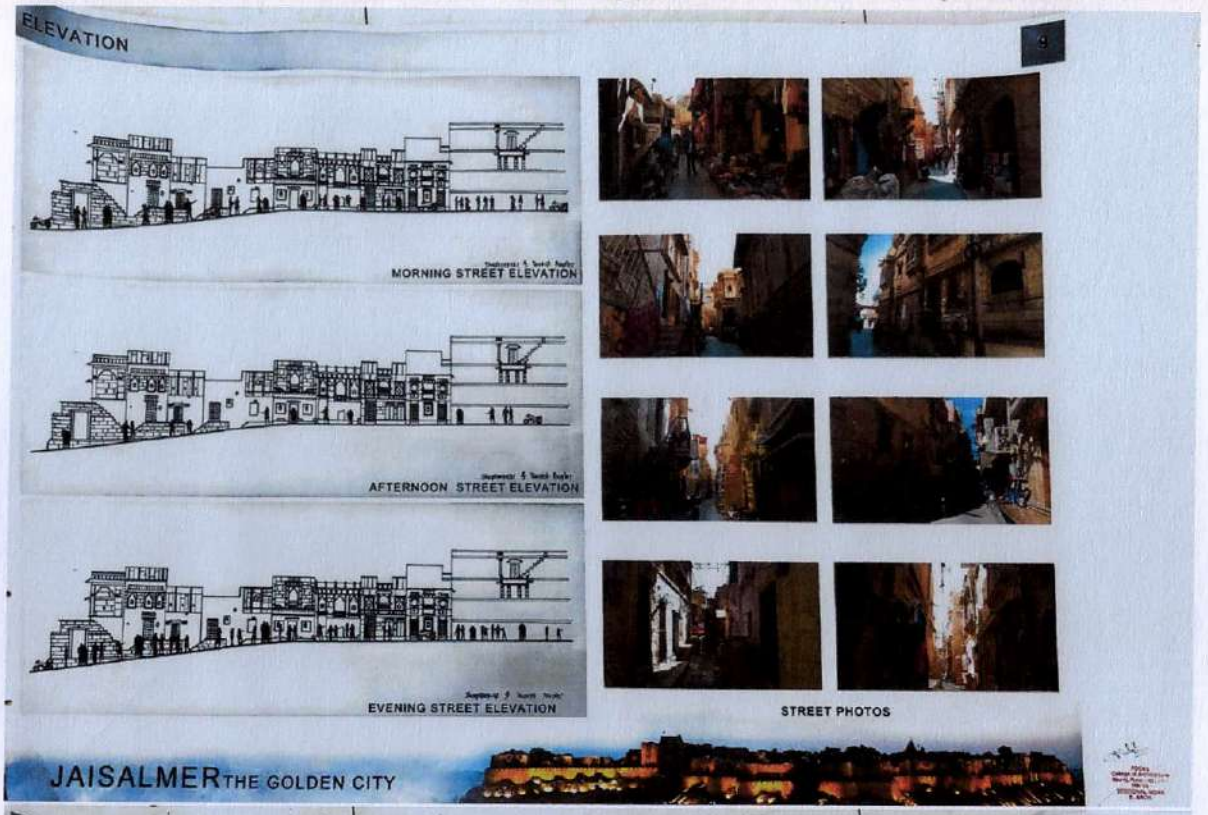

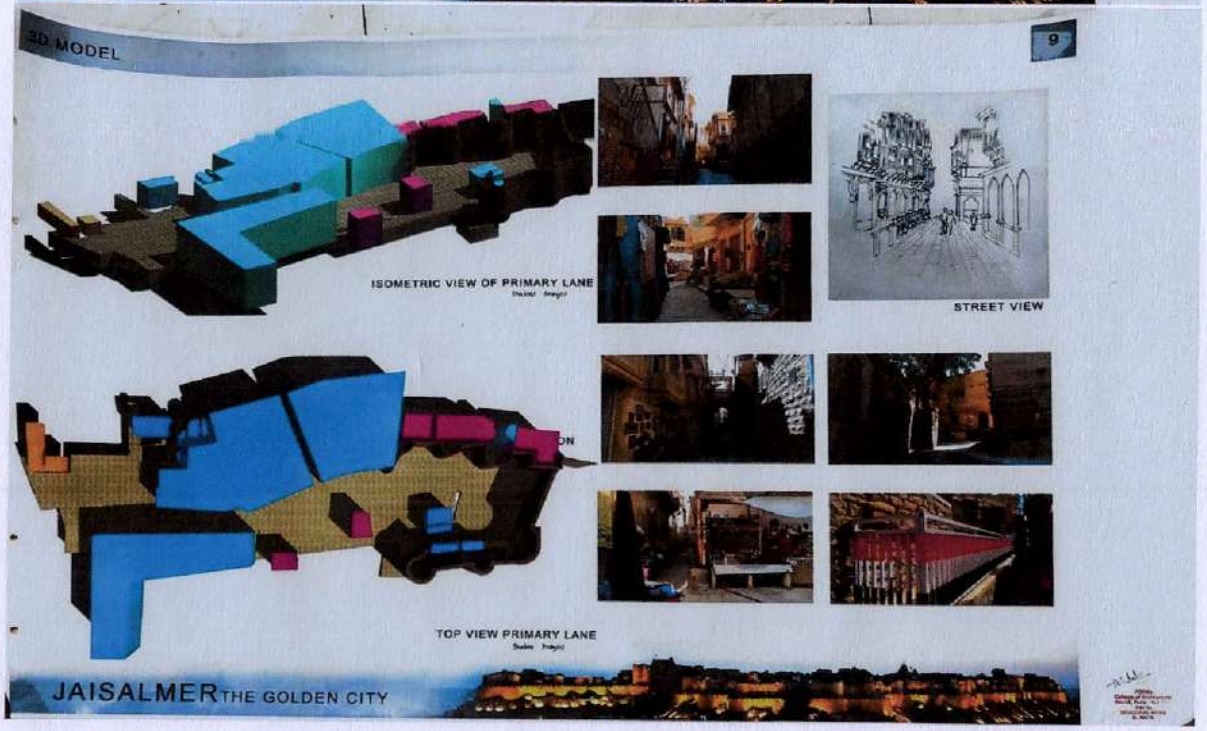

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Experimental Learning

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Experimental Learning enhance the knowledge of Architectural design concepts.

Students learn through this Experimental methodology in different subjects ,Such as

- Architectural Design,
- Basic Design
- History of Architecture
- Building Construction And Tectnology ,
- Building Services,
- Working Drawings.
- Landscape Architecture
- Contemporary Architecture
- Elective
- Advanced Building Technology And Services
- Research In Architecture
- Architectural Design Project

Some of the sample portfolio's of students are attached.

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Academic Year 2018-2019

Tranformation of Form in Design

This is held for the first year students (**40**) on 15-10-2018

In the transformation assignments students get to know that all the other forms is the transformation of the primary solids ,variations can be generated by the manipulation of one or more dimensions or by the addition of substration of elements.

Various types of Transformation

- Dimensional Transformation
- Subtraction Transformation
- Additive Transformation

Students outcome:

- Students learn how to handle the material
- A2 sheets with all information and photographs of model
- Students learn from one volume or the primary solids , different forms can be created by dimensional ,substraction and additiuve transformation

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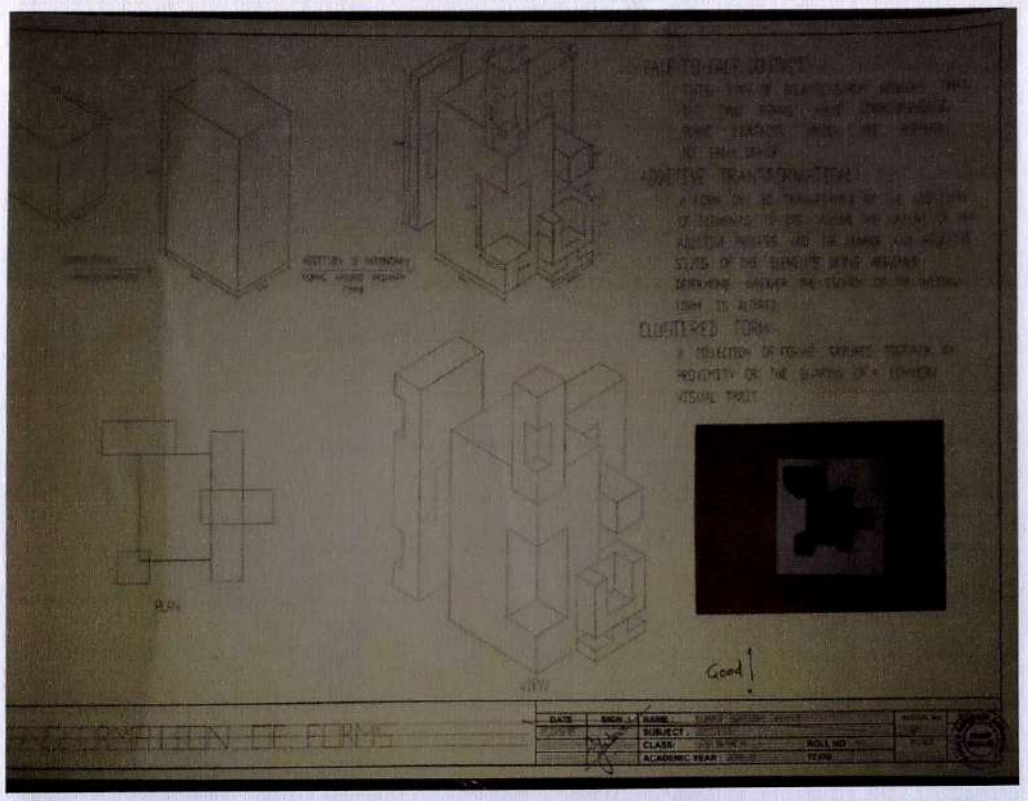

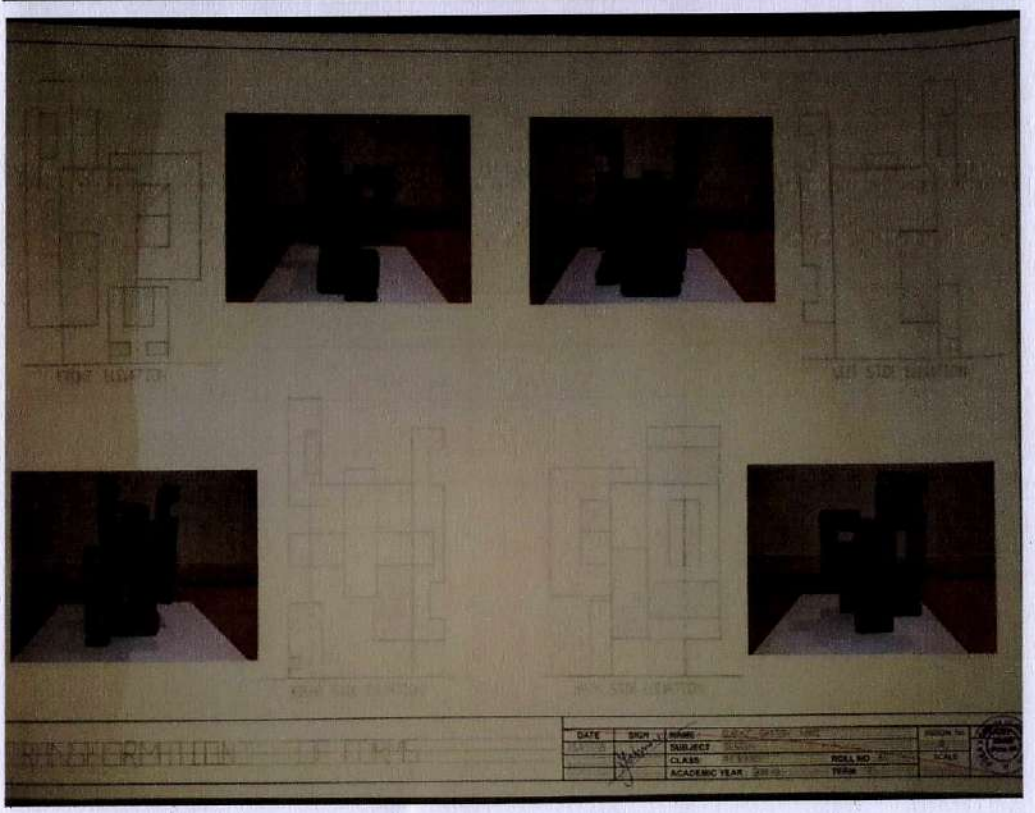

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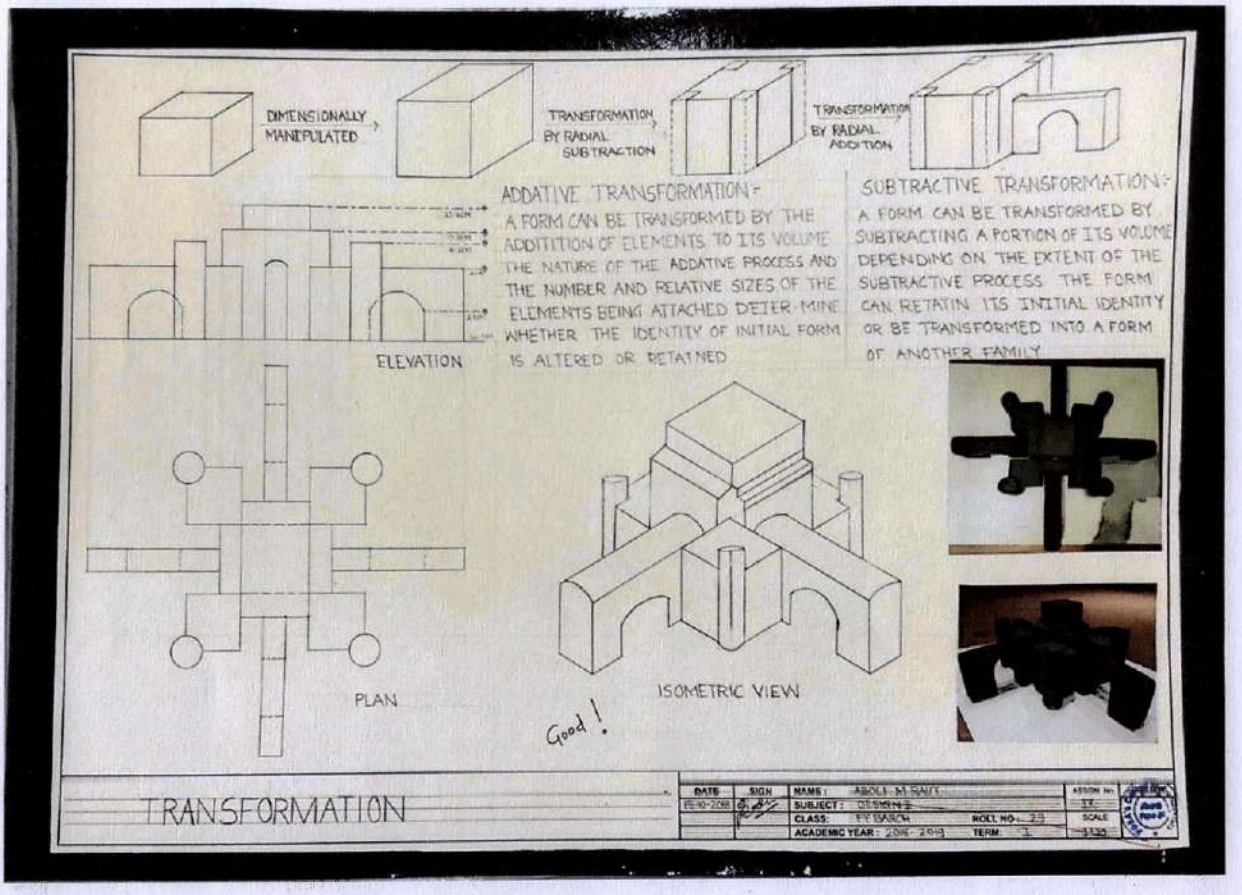

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Academic Year 2019-2020

Articulation of Form

This exercise is held for the first year students on **14-10-2019**.Articulation of form refers to the manner in which the surfaces of a form come together to define its shape and volume.An articulated form clearly reveals the precise nature of its partsand their relationships to each other and to the whole.its surface appear as discrete planes with distint shapes and their overall configuration is legible and easily perceived.in a similar manner,an articulated group of forms Accentuates the joints between the constituent sparts in order to visually express their individuality.

A form can be articulated by:

- Differentiating adjoining planes with a change in material,color ,texture or pattern.
- Developing corners as distinct linear elements independent of the abuting planes.
- Removing corners to physically separate neighbouring planes.
- Lighting to the form to create sharp contrasts in tonal value along edges and corners.

Students outcome:

- Students learn how to handle the material
- A2 sheets with all information and photographs of model
- Students learn to create sharp contrasts in tonal value along edges and corners.
- Students learn to Develope corners as distinct linear elements independent of the abuting planes and with a change in material,color ,texture or pattern.

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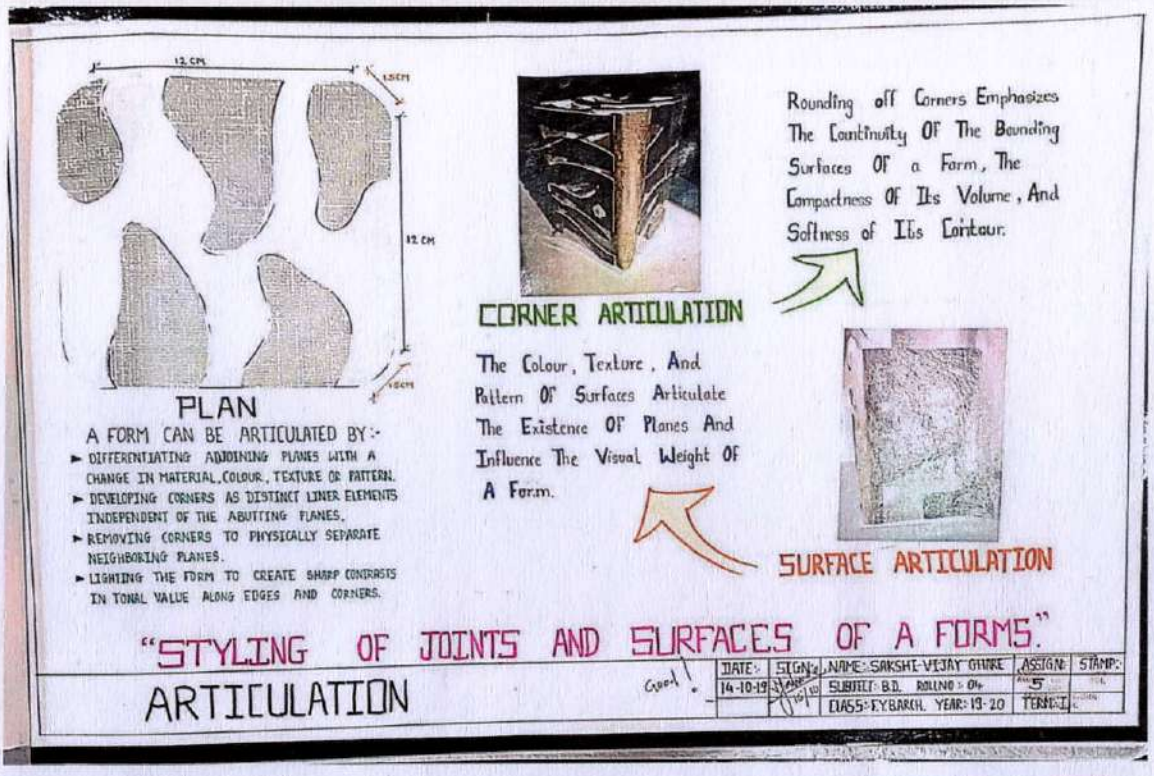

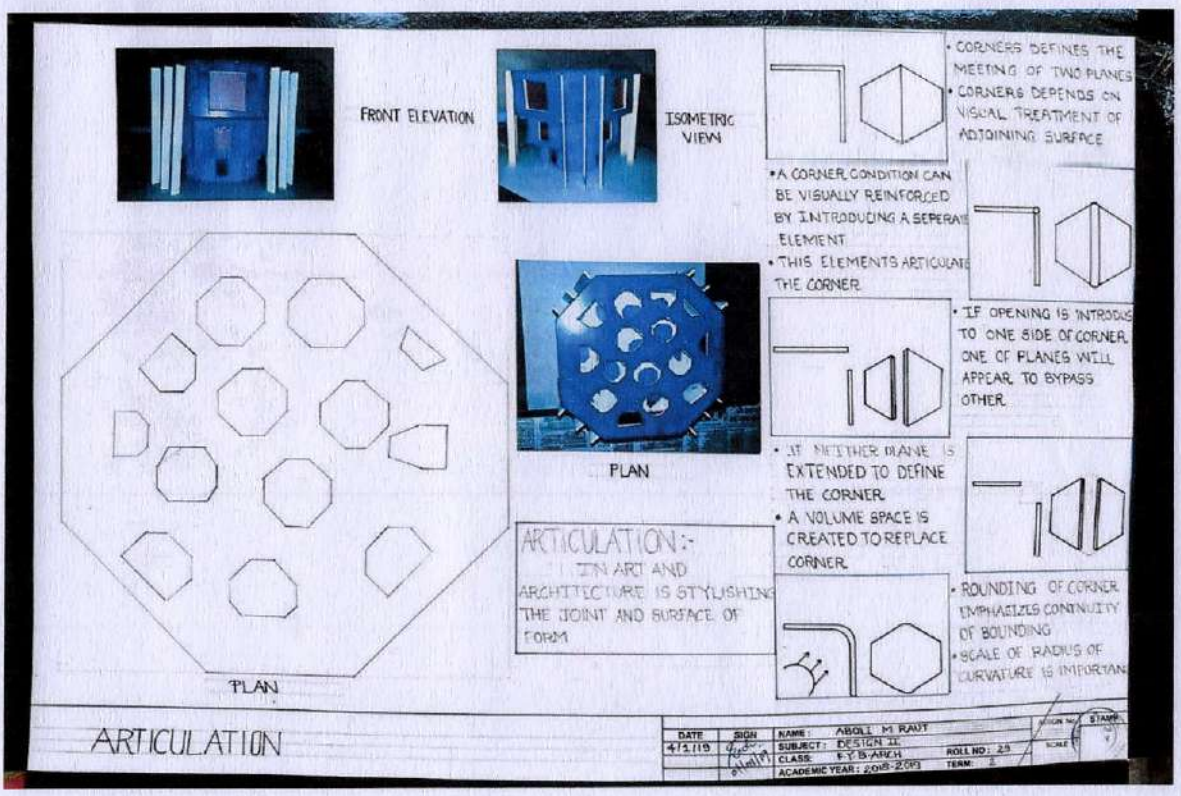

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BUNGALOW DESIGN

A bungalow is a residential building for family that is either designed to be single storied, or double-storied in its articulation.

Aim:
To design a double-storied bungalow for a family of six-members – a father, a mother, two siblings, a grandfather and a grandmother. The design for the bungalow should be such that the second floor should be accessible without the use of mechanical means (i.e., vertical circulation should be through staircase. No provisions for lifts, or escalators is allowed).

The design should be replicable, into another unit of the same configuration as stated above, with optimum space between them, to be placed on site as per design. In the end, the two bungalows should be acting as separate dwellings, but being part of a single property.

Objectives:
- To design a bungalow with utmost attention given to the quality and articulation of spaces, proper division of functions (private and semi-private usage) and optimum circulation (both horizontal and vertical) that connects all spaces across the design.
- To understand, and establish the connections between climactic aspects of light, cross-ventilation and climate effective design, and to use passive design strategies such as passive lighting, natural ventilation and protection against rain.
- To study, understand and propose appropriate materials for the construction and design of the bungalow
- To design a bungalow that follows the principles of design in terms of aesthetics (Scales, Proportions, Profiles, Corners, Terminations, Play of Light & Shadows etc).

Methodology
In order foster an exploratory design process and a conclusive product, the following methodology shall be followed as a blueprint for design.

- **Data Collection**

All design-related information pertaining to the design of a bungalow, and the scheme given above should be collected and be used as a template. Data from Standard Books like Neufert, Times Savers' Standards, Metrics of Dimensions shall be referred.

- **Case Study**

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A detailed study of an already existing bungalow (similar/close to the proposed scheme) shall be prepared, in order to have a clear idea of how spaces are to be designed. The case study should entail the analysis of spaces, material, site context, aesthetics, planning and design, and establishing relationship between the inhabitants and the bungalow itself.

- **Climate and Site Analysis**

The study of the climate, and the analysis of the site conditions of the given site shall be done, in accordance with the possibilities of designing the bungalow. Data should be prepared for the understanding of siting, orientation, sun-path (The critical paths through which sun would affect the design), wind-rose (the critical wind direction which can be utilized in the design), site section, site context and all other relevant information that would be important for the design of the bungalow.

- Design Strategies
- Site Zoning and Circulation
- Evolution of Plan
- Evolution of Elevations and Sections
- Material Study and Its Applications
- 3D Visualizations (Sketches, Views, Renderings etc).

Design Requirements

Space/Room	Purpose	Area
Living Room	Also referred to as a sitting room or lounge, it's the space where the home owners and family members gather to spend time together. It's a majorly a space of recreation. The room is generally furnished with comfortable chairs, sofas, recliners, a media unit with spaces conforming to recreation.	20 sqm
Drawing Room	A space which is mainly used for entertaining the guests. The drawing room is typically situated near the entrance and close to the front door so guests can go directly inside without having to pass through other rooms	20 sqm
Family Room	Entertainment / living Space for family. It may be on the first floor.	30 sqm
Dining Area	Dining table should accommodate all family members hence it should be 6 or 8 seating capacity. Dining area should have proper circulation in and around and it should have proper connectivity to the kitchen and common wash basin.	20 sqm
Kitchen	Kitchen should be designed with cooking platform stove, sink and refrigerator. It should be composed of cooking	16 sqm

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	areas, and utility Area with dishwashers, washing machines, space for drying clothes etc.	
Master Bedroom + Attached Toilet	Bedroom furnished with minimum Bed, walk-in wardrobe, study table and TV. The Master Bedroom is often considered as the largest bedroom in a bungalow.	30 sqm + 4 sqm
Grandparent's Room + Attached Toilet	Bedroom furnished with minimum Bed, walk-in wardrobe, study table and TV. The design should be conducive to an aged couple.	25 sqm + 4 sqm
Children's Bedroom + Attached Toilet	Bedroom furnished with minimum Bed, walk-in wardrobe, study table and TV.	25 sqm + 4 sqm
Guest Bedroom + Attached Toilet	Bedroom furnished with minimum Bed, walk-in wardrobe, study table and TV.	25 sqm + 4 sqm
Gym Area	The Gym Area should have enough space for exercising and yoga.	25 sqm
Puja/Prayer Room		5 sqm
Powder Room	A semi-private area with a wash-closet and a basin designed for guests, and proximity	4 sqm

Project Outcome & Deliverables

- Portfolio 01 – Data Collection, Case Study & Site Analysis

- Portfolio 02 – Tracings / Design Evolution/Study Models

- Portfolio 03 – Final Design Proposal

Site Plan
Ground Floor Plan
Second Floor Plan
Terrace Floor Plan
Elevations of All Sides
Minimum Two Sections – Through Toilets and Staircases.
Material Specifications Sheet
Visualizations, Renderings and Views

- Final Model

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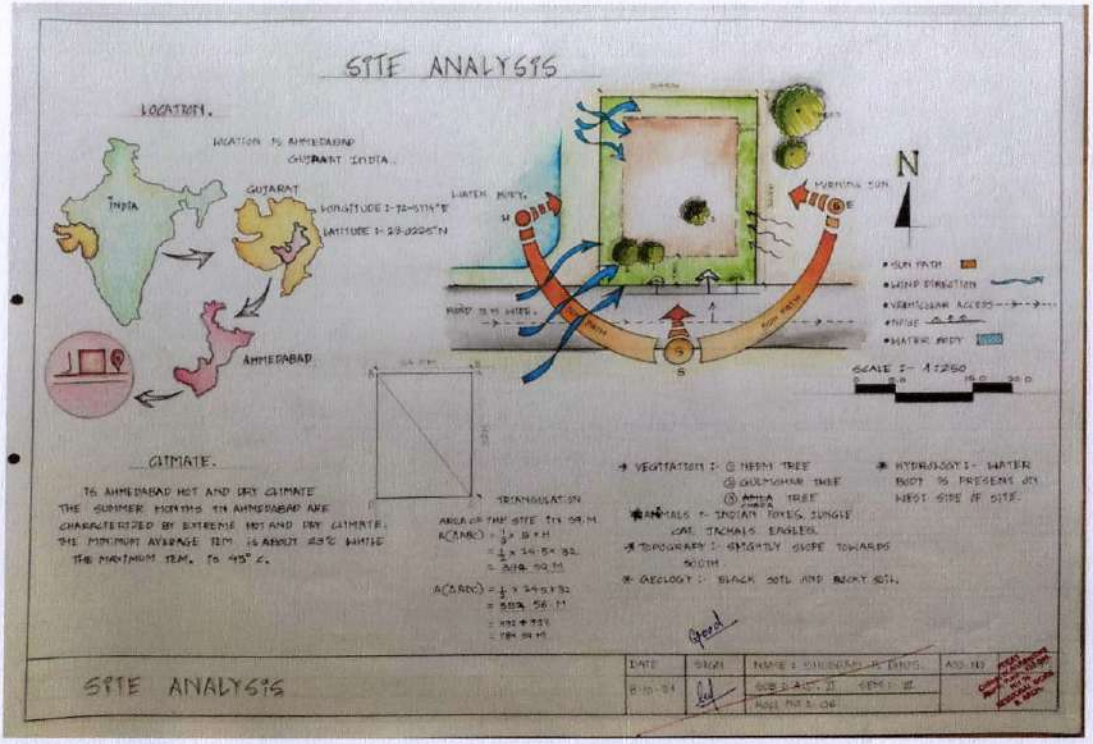

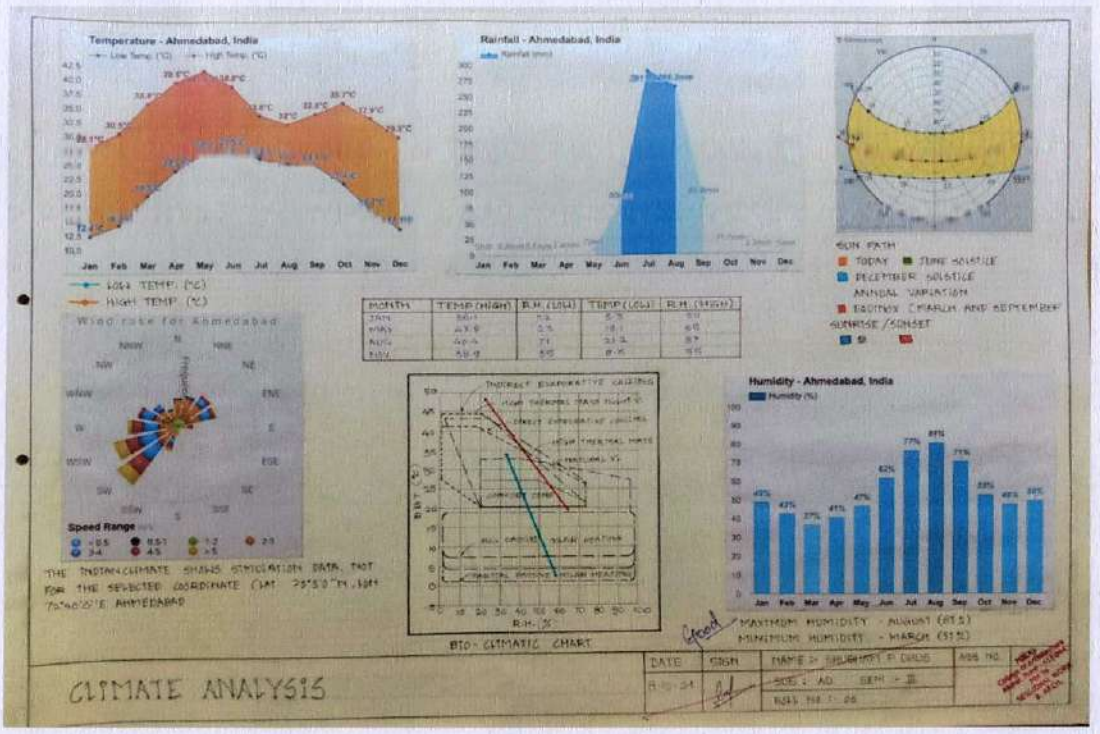

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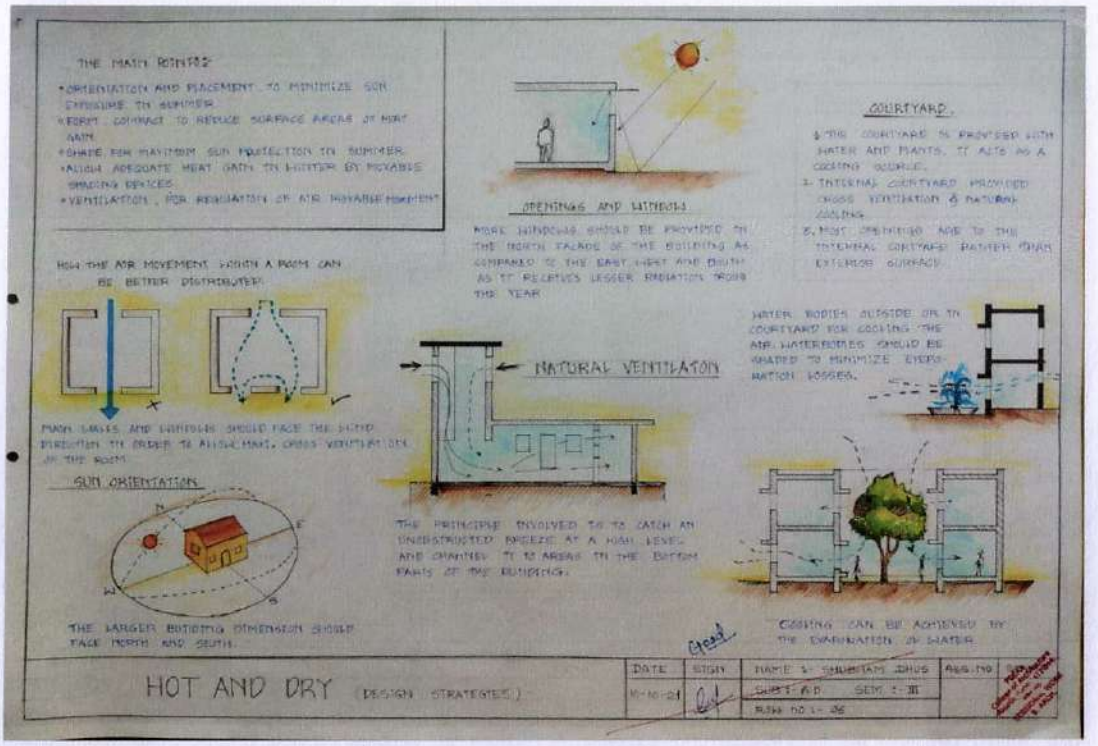

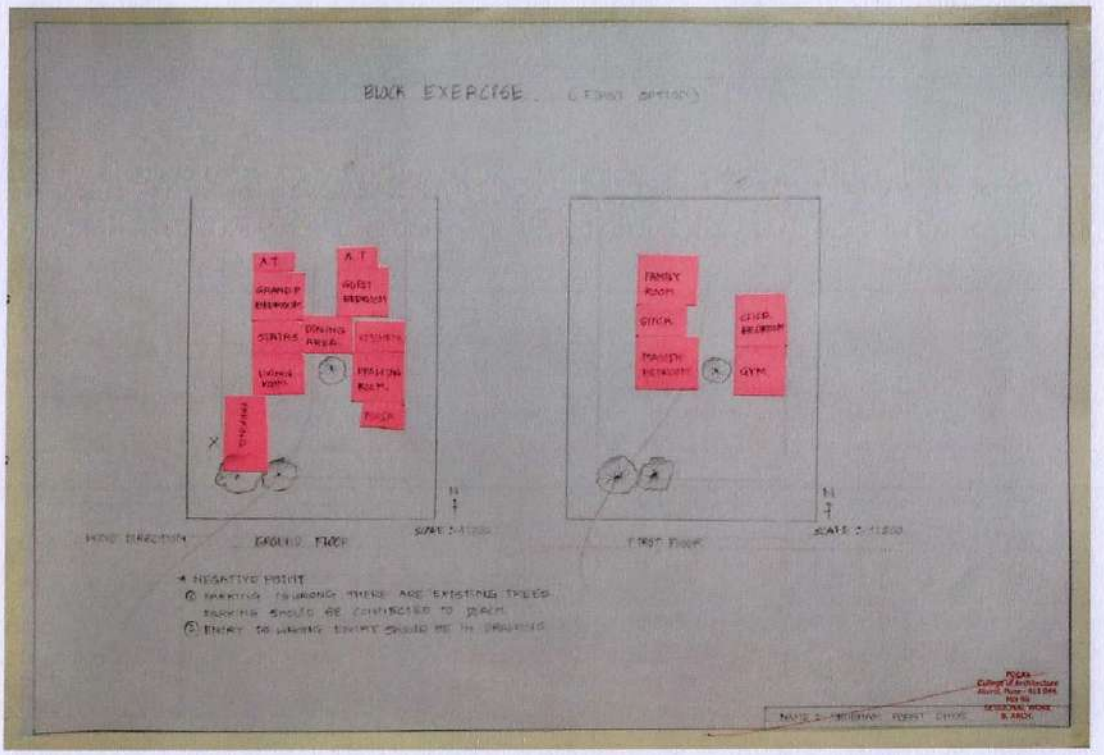

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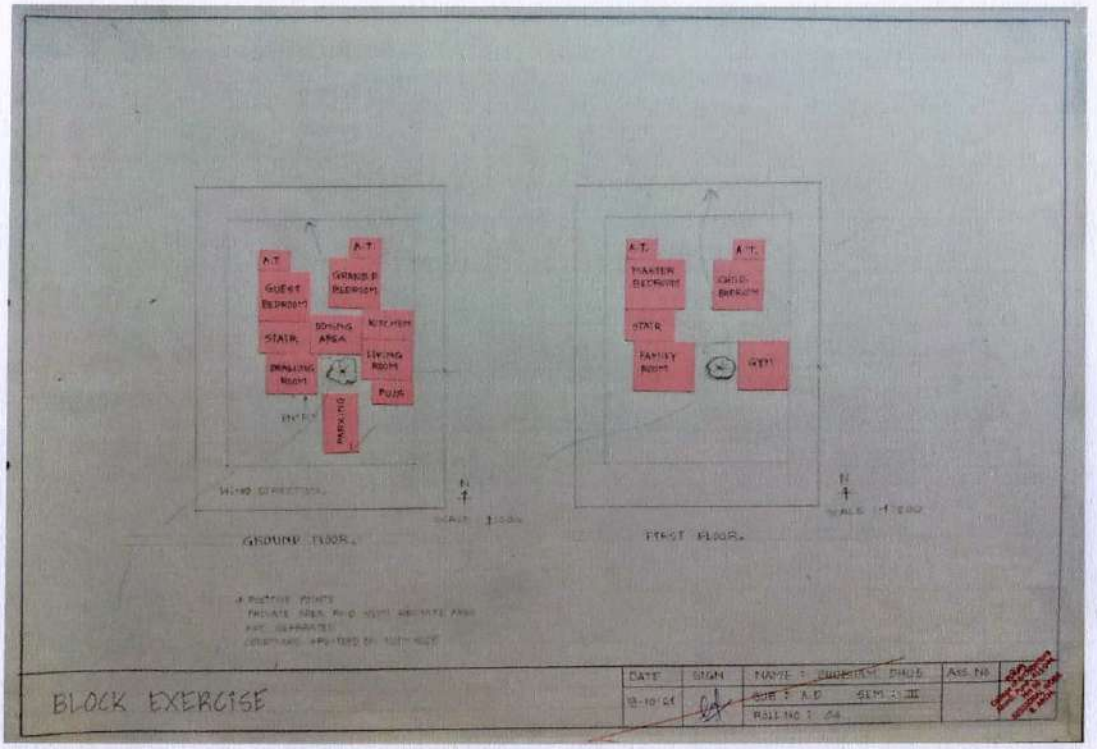

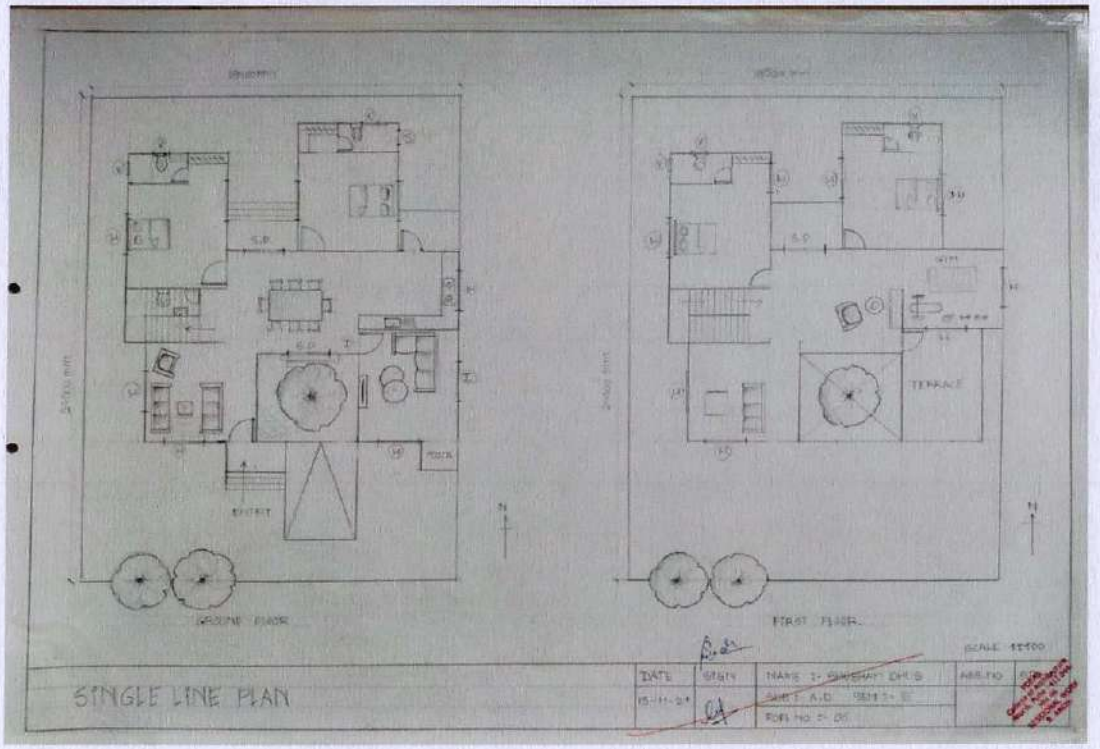

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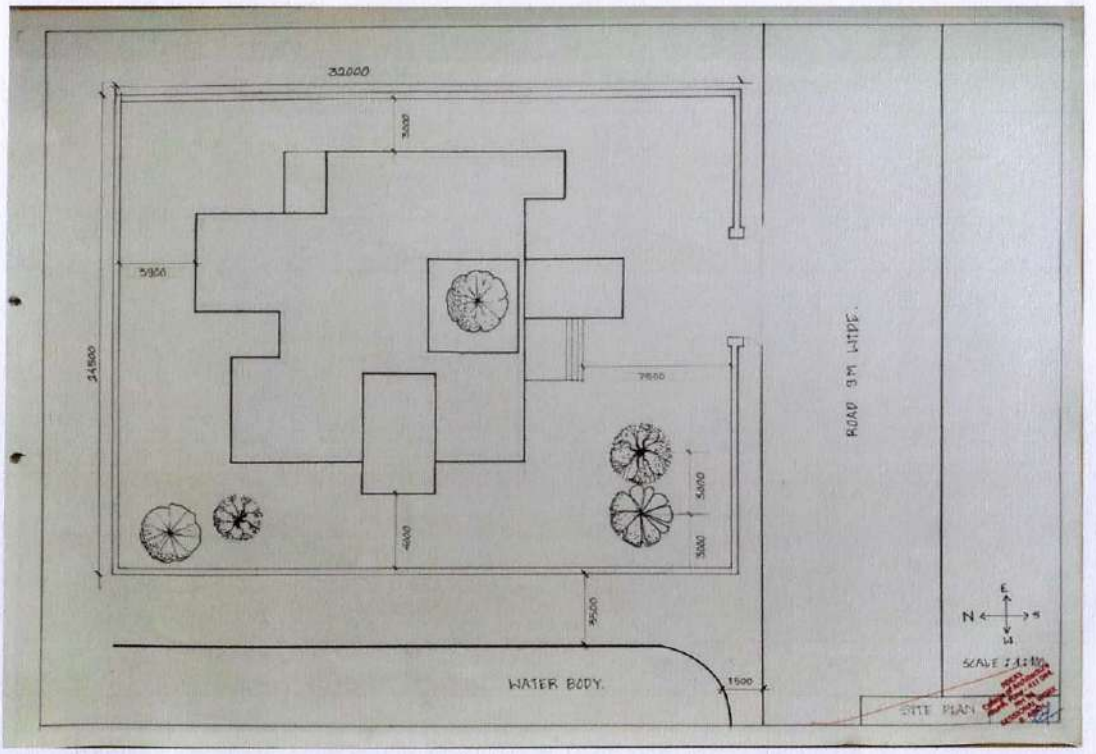

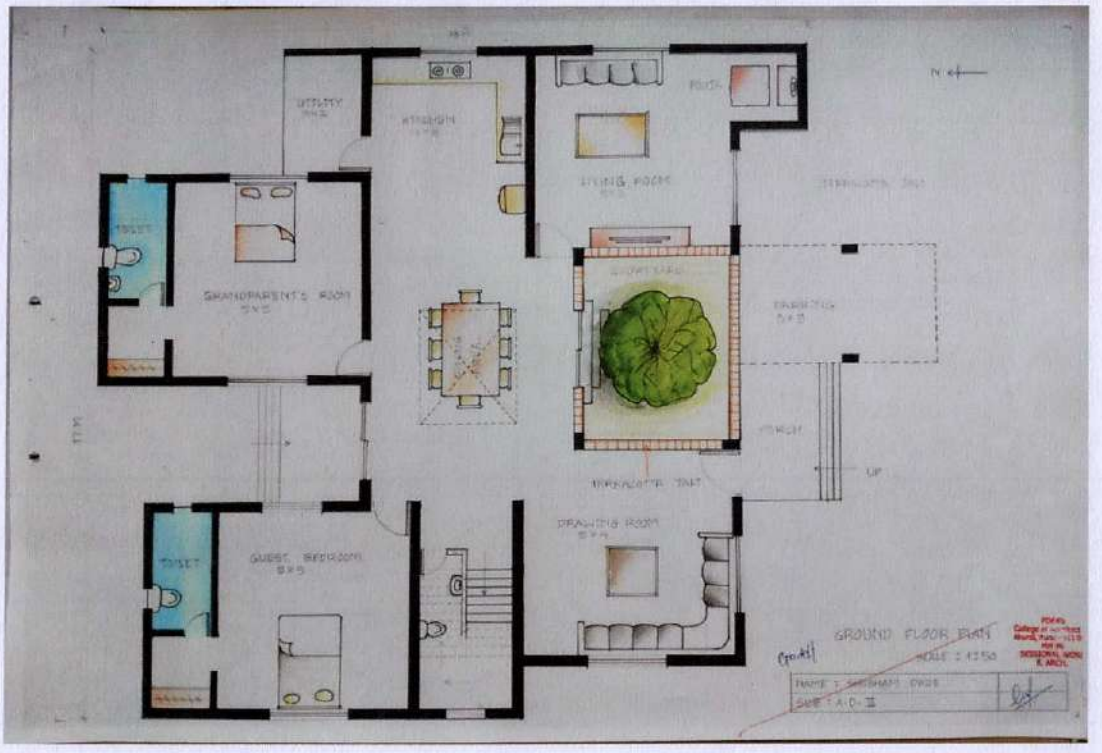

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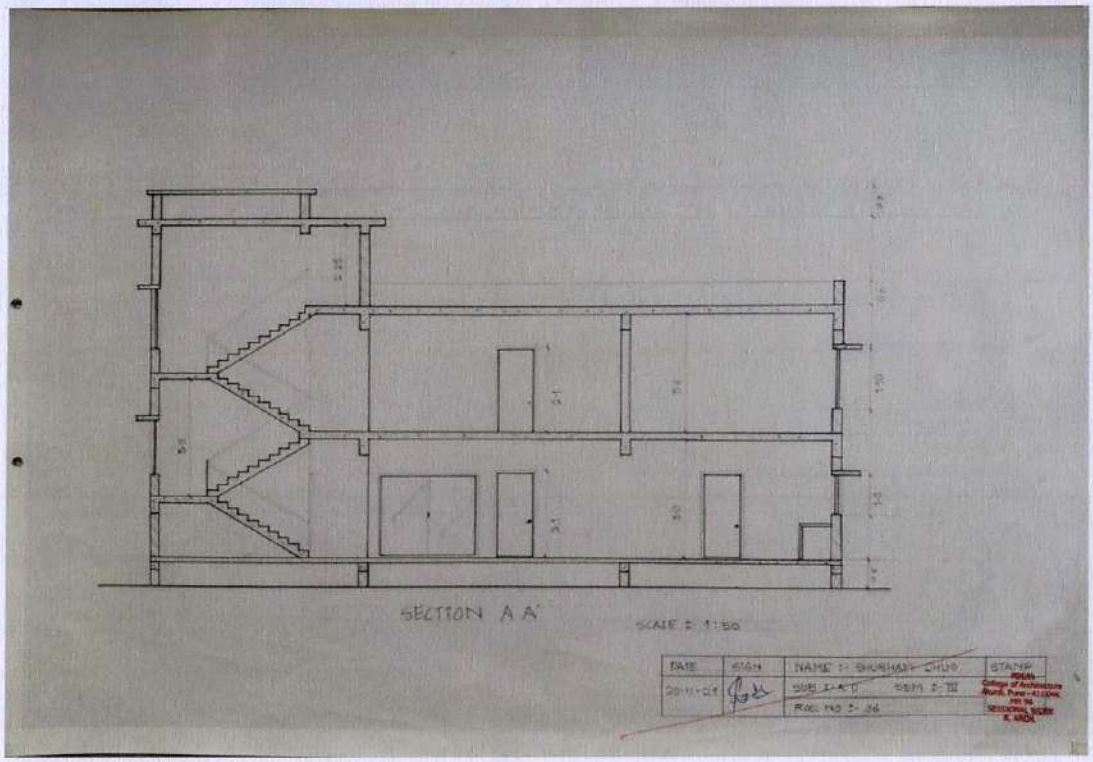

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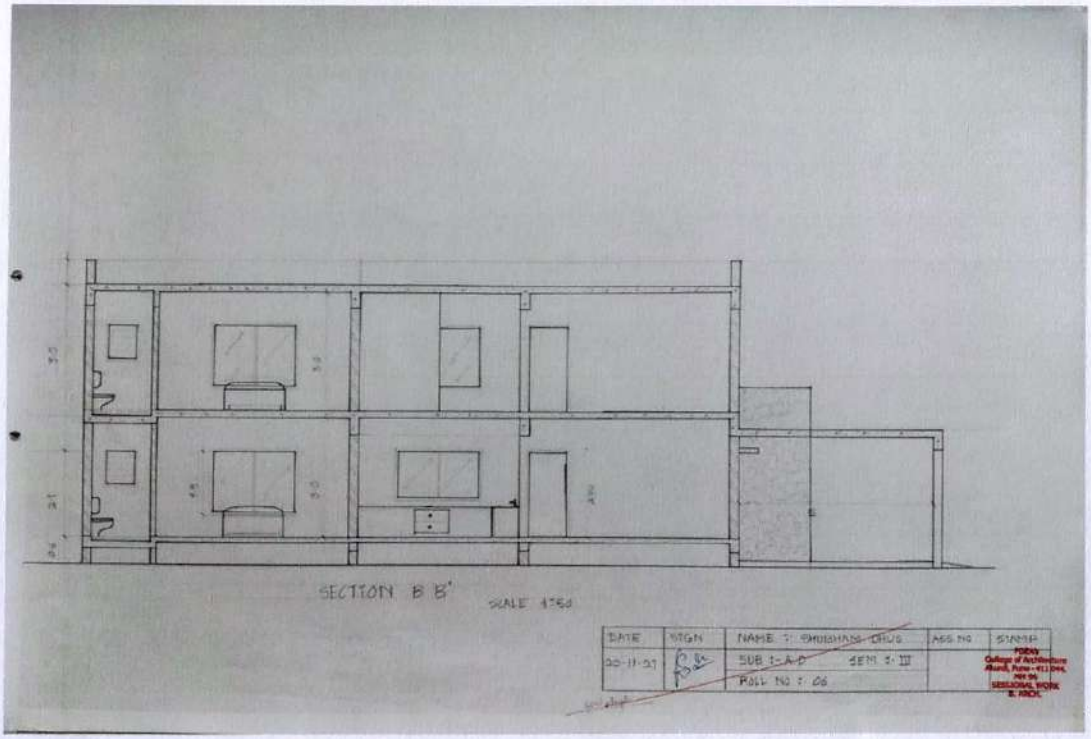

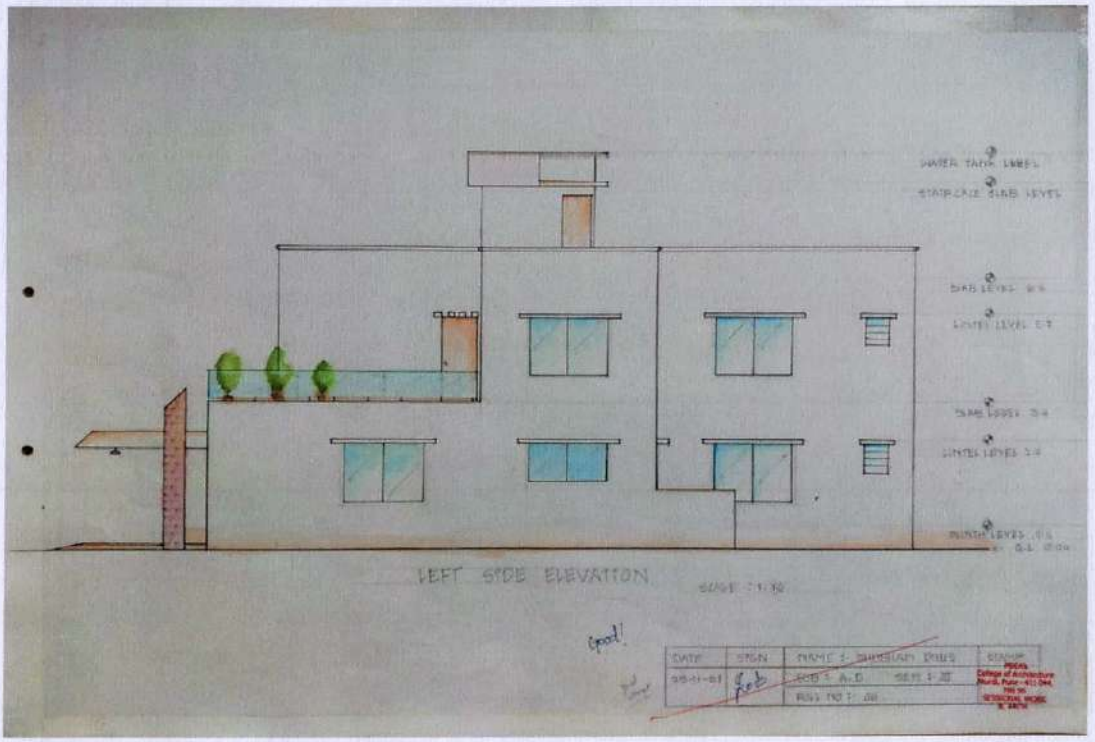

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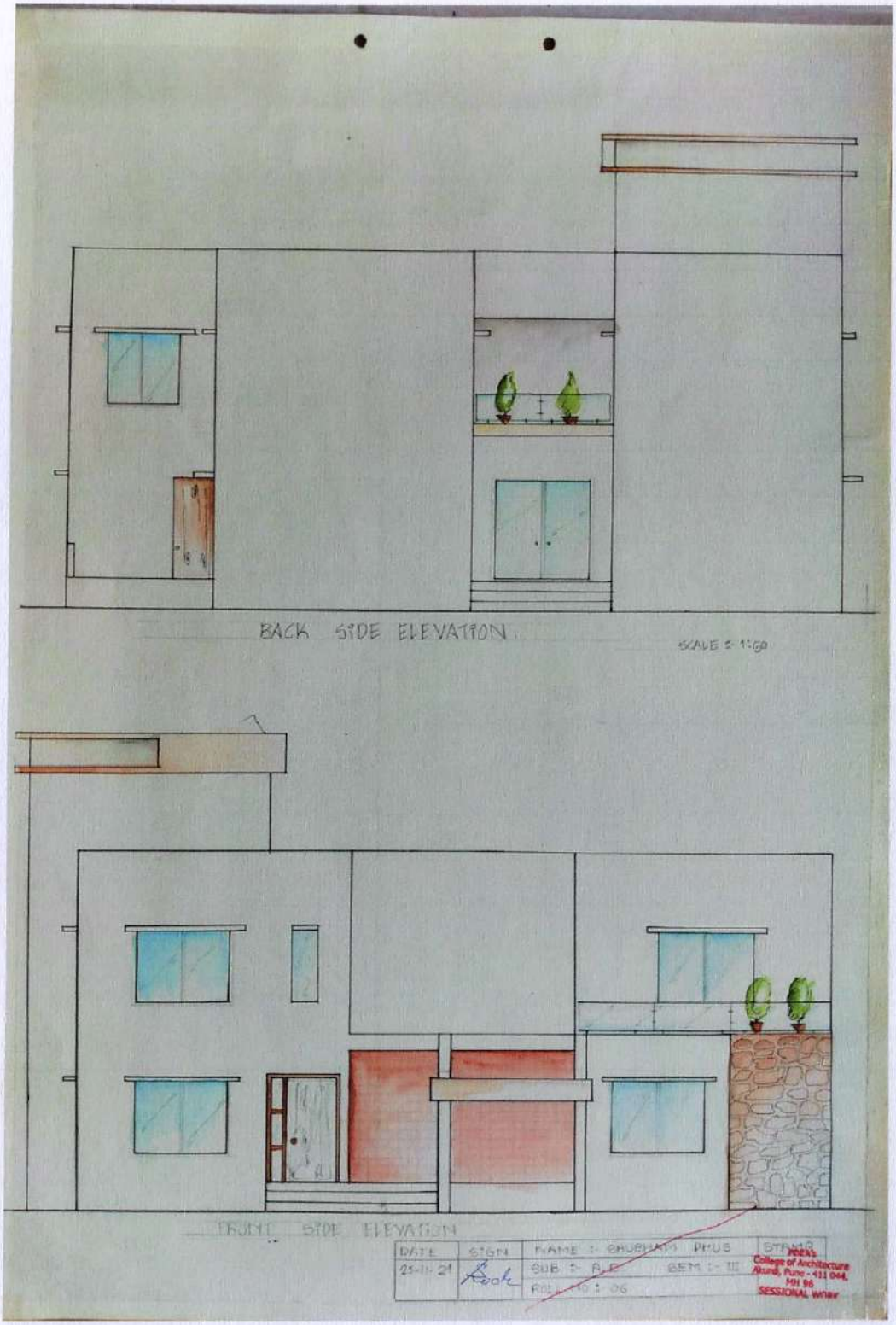

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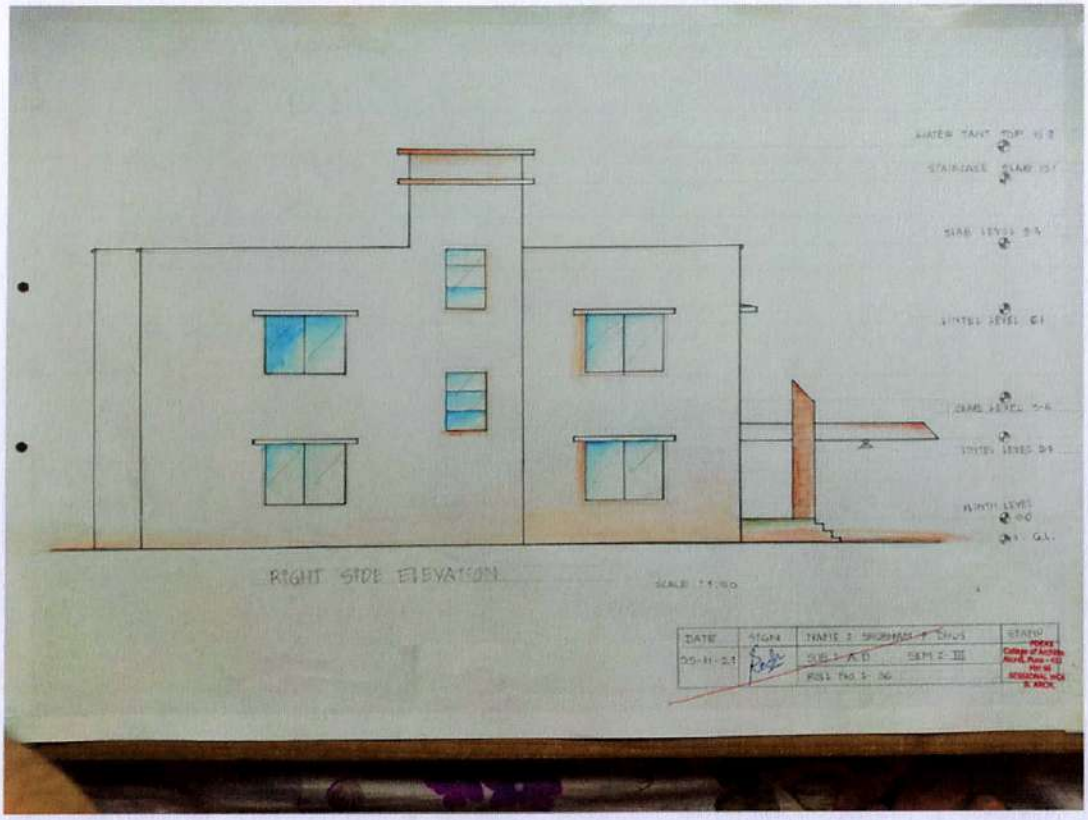

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Project – 02

BUNGALOW DESIGN DETAILING

Aim:

To take the previously designed bungalow, and propose design schemes for the following -

- Landscape design with hardscape and softscape schedules and planting policies
- Rain and/or snow harvesting (climatically wherever applicable)
- Building services including water supply and sewerage disposal

Methodology

Since this is an extension of the existing design problem, utmost care is to be taken while designing the above mentioned schemes for the bungalow, wherein coordination with disciplines like building services, landscape design, rain and/or snow harvesting.

- Landscape Design

Access to all parts of the site is to be paramount, as well as a fundamental understanding of vistas, views and sightlines, along with aesthetically and functionally pleasing landscape schemes are to be prepared.

After the initial proposal, softscape and hardscape is to be decided using climatically appropriate materials, and to enhance the building design in its fundamental form.

- Rain/Snow Harvesting

Detailed calculations of rain/snow harvesting schemes are to be calculated, and the final output is to understand how much water is being used for landscape and domestic use. The final value is to be presented as a percentage of the water requirements.

Along with the calculation, layouts showing the technical details of a typical rain-water or snow harvesting system are to be prepared, placed in the context of each bungalow design.

- Building Services

Toilet Layouts are to be prepared in detail, showing all requisite toilet fittings, with demarcation and understanding of dry and wet areas. Along with the drawings and layouts for the same, the routes of hot and cold water pipes are required to be shown in the same layout. A typical layout of the toilet is required in detail.

A layout showing sewerage disposal, with all technical details, is required to be prepared for each design, showing their connections to the final municipal connection for sewage disposal.

A layout showing water supply, with all technical details, is required to be prepared for each design, showing their connections to the final municipal connection for water supply.

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Project Outcome & Deliverables

- Landscape Design
  - Landscape Layout
  - Hardscape Schedule
  - Softscape Schedule
- Rain/Snow Harvesting
  - Harvesting Layout
  - Calculations for Water Requirement
- Building Services
  - Detailed Toilet Layout
  - Water Supply & Sewage Disposal

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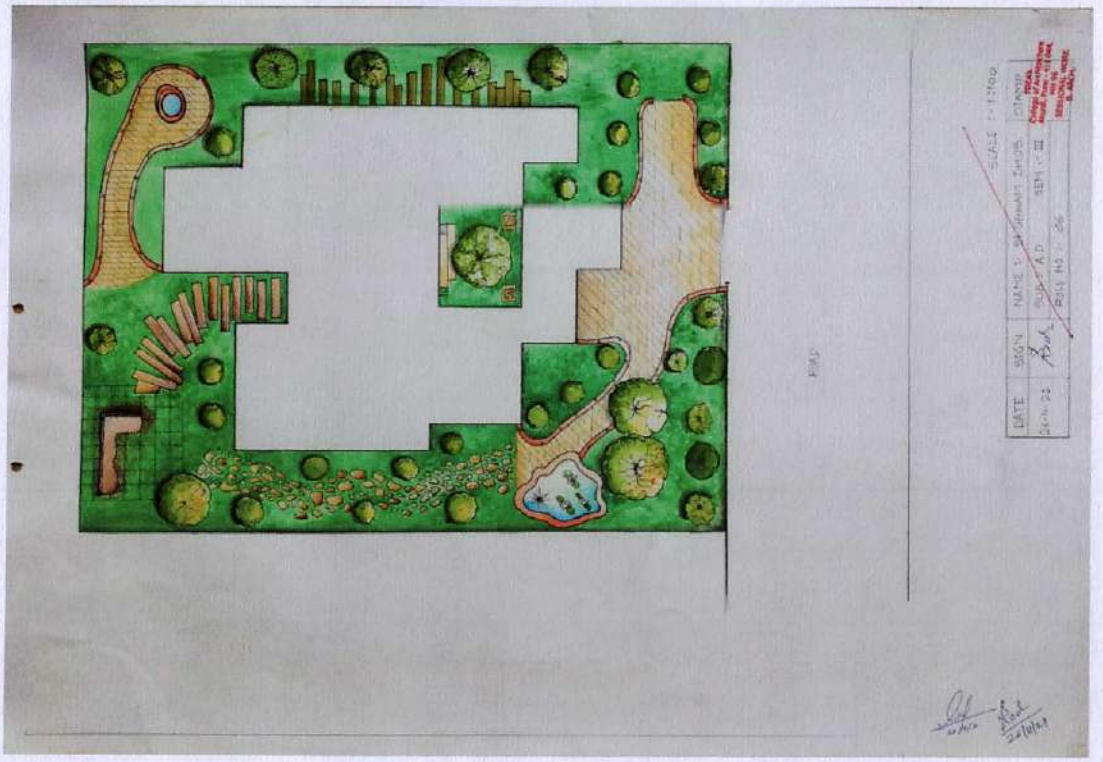

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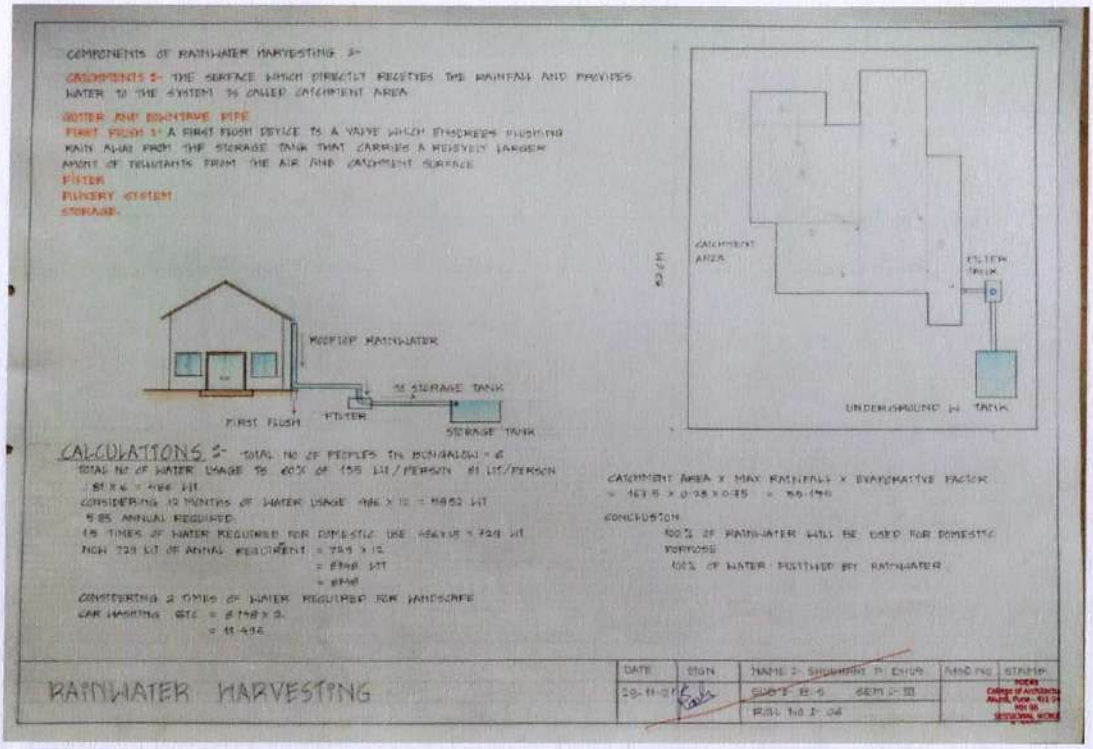

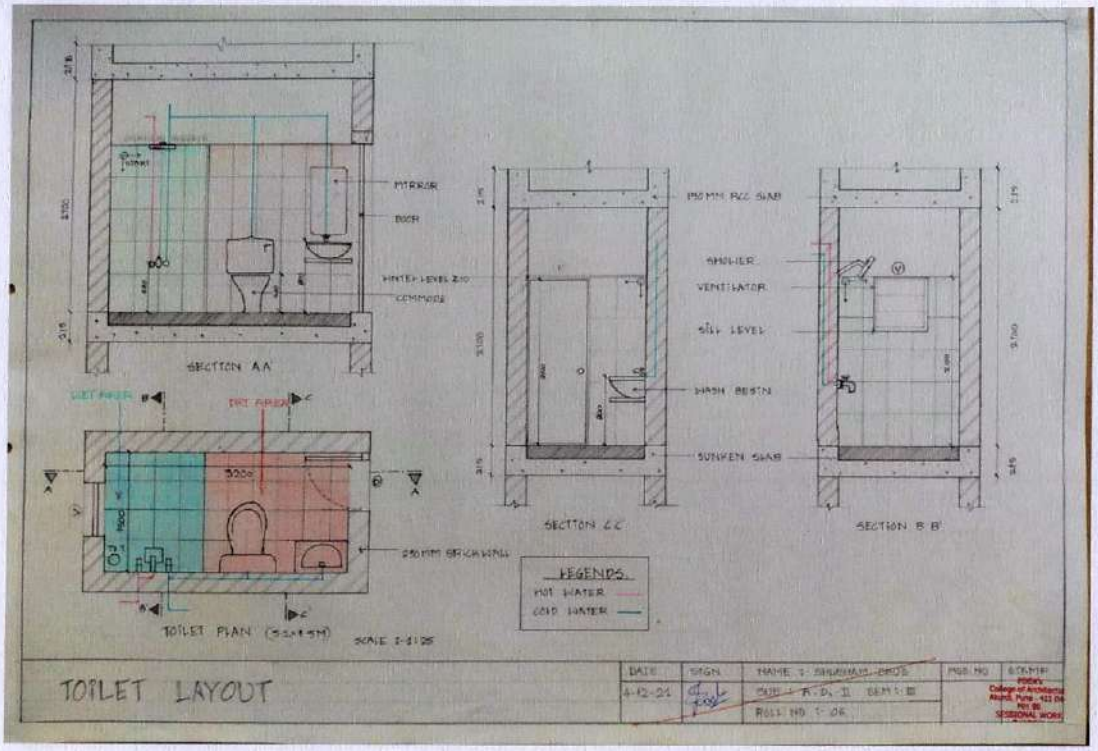

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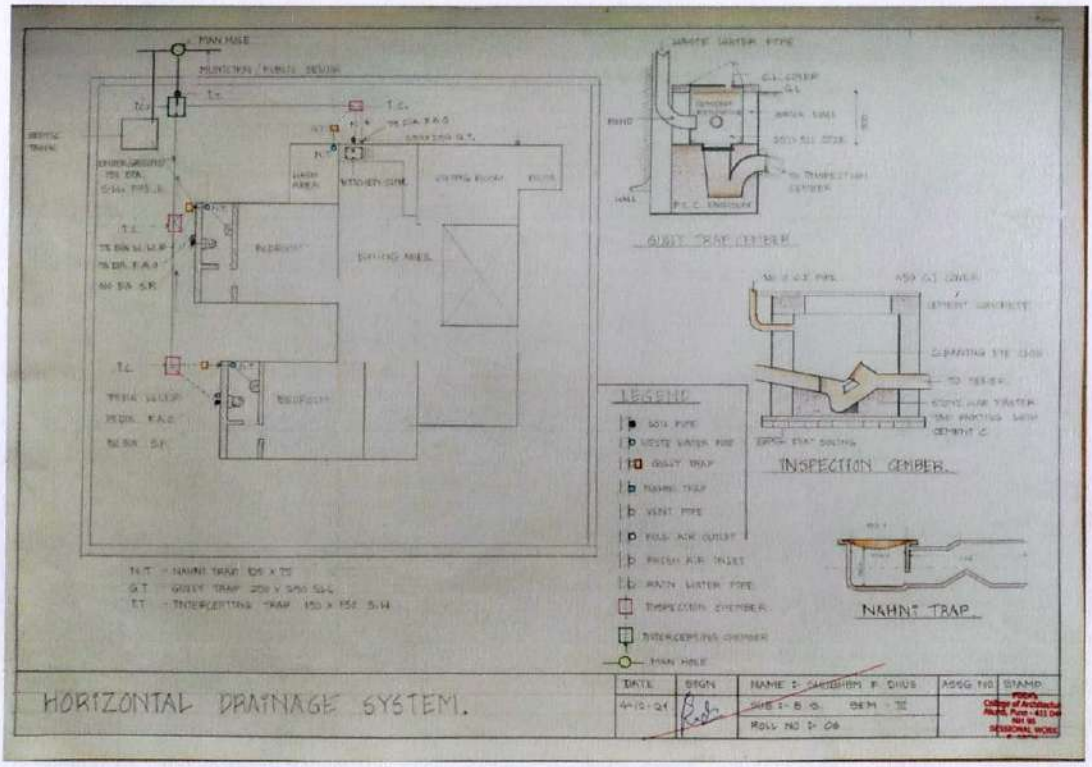

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Architectural Design III

Total Marks 250 Course Code2201926 [SV]

AIM:

- To design Resort with an area 1000 sq.m. to 1500 sq.m.

OBJECTIVES:

- This project should house a variety of core and allied activities requiring built, open, and transition spaces.
- To design a resort considering the activities, with proper use of space, space for the particular activity, proper circulation.
- To understand the Climatic aspects (Sun, Wind and Rain) and design a bungalow with passive strategies like adequate light, natural ventilation, insulation (if required), fenestration, thermal comfort and protection from rain.
- Design a Resort with Aesthetics (scale and proportion, Profile, corner,termination, Light and shadow.
- Composition of the open & Semi open on site is to understand the site and its context, both immediate and wider, in order to take decisions of zoning, circulation within site, distribution of built and open spaces, activity relationships and adjacencies, and views.

Methodology:

- Data Collection
  (collection of data from the books like Neufert, Times savers standards, Metrics of dimension, etc. of standards for designing each and every space)
- Case study
  (Learning from case, referral, live studies - process of observation, analysis, documentation and deriving inferences)
- Climate and Site Analysis
- Design Strategies
- Site zoning and circulation
- Evolution of Plan
- Evolution of Elevations and sections
- Material study and its Application
- 3D Visualization (sketches /views

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RESORT DESIGN

Aim

- To design a resort with an area between 1000 sq.m. to 1500 sq.m.

Objectives

- To design an architecturally viable resort proposal that will house all the provided requirements.
- This project should house a variety of core and allied activities requiring built, open, and transition spaces.
- To design the resort in consideration with activities, proper use of space for the user and the use, and with a focus on campus-level circulation, and site planning, and site-level services.
- To understand the physical aspects (contours, terrains, surface water movement, and vistas), and to incorporate them in the design.
- To design a resort that takes in account its immediate physical, cultural and aesthetical relationships with its context.
- To create an architectural sense in terms of zoning, circulation within site, distribution of built and open spaces, activity relationships and adjacencies, and views.

AREA SCHEDULE

Sr No	Area Name	Capacity (No of Users) / Notes	Units	Area (in sqm)
1	**PARKING**			
	Two Wheeler	10	10 nos	as per design
	Four Wheeler	5	5 nos	as per design
	Bus	1	1 no	as per design
	Staff Parking	5 People		as per design
1	**ENTRANCE BLOCK**			

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	Porch	as per design	1 nos	as per design
	Reception Area	>2	1 nos	9 sqm
	Waiting and Lobby	>12	1 nos	9 sqm
	Lounge	6	1 nos	9 sqm
	Cloak Room		1 nos	9 sqm
	Store Room		1 nos	9 sqm
2	**ADMINISTRATIVE BLOCK**			
	Manager's Cabin + Attached Toilet	1 + 4 People	1 nos	10 sqm
	Account's Office	3 People	1 nos	9 sqm
	Meeting Hall	15 People	1 nos	15 sqm
	Staff Room	2 People	1 nos	10 sqm
	Staff Toilet - Male	2 People	1 nos	5 sqm
	Staff Toilet - Female	2 People	1 nos	5 sqm
	Toilets - Male/Female	2 People	1 nos	6 sqm
3	**THEMED RESTAURANT**			
	Indoor Sitting	10 Tables + Associated Requirements	1 nos	128 sqm
	Outdoor Sitting	10 Tables + Associated Requirements	1 nos	
	Toilets (Male)	5 People	1 nos	
	Toilets (Female)	5 People	1 nos	

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	Kitchen (With Attached Male, Female Toilets)	Preparation, Baking, Cold Food, Range Grill and Other Requirements.	1 nos	70 sqm
	Kitchen Storage	Goods receiving, Common Dry Area, Refrigeration and Storage	1 nos	16 sqm
4	**ACCOMMODATION BLOCK**			
	VIP Suite	2 People	2 nos	>100 sqm
	Deluxe Suite	2 People	2 nos	>100 sqm
	Semi-Deluxe Suite	2 People	3 nos	>80 sqm
	Male Dormitory	4 People	1 nos	40 sqm
	Female Dormitory	4 People	1 nos	40 sqm
5	**RECREATIONAL BLOCK**			
	Spa	8 people	1 nos	30 sqm
	Banquet Hall	20 people	2 nos	65 sqm
	Play Area - Indoor/Outdoor	5 People (Indoor); Outdoor - As per design	1 nos	15 sqm; Outdoor - As per design
	Swimming Pool		1 nos	as per design
	Gymnasium	10 people	1 nos	20 sqm
6	**SERVICE AREAS**			
	Site Maintenance Office	4 people	1 nos	16 sqm
	Site Laundry Room	All laundry of the site is to be bought, washed,	1 nos	10 sqm

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		cleaned, dried and redistributed		
	Power Substation	Substation for a campus of the given design	1 nos	as per design
	Generator & Battery Room	As per requirement	1 nos	16 sqm
	Water Supply Tank (UG/OHT)			as per requirement
	Guard Room	2 - 3 People	@Entry	10 sqm

Methodology:

- Data Collection

(collection of data from the books like Neufert, Times savers standards, Metrics of dimension, etc. of standards for designing each and every space)

- Live Case study
- Climate and Site Analysis
- Design Strategies
- Site zoning and circulation
- Evolution of Plan
- Evolution of Elevations and sections
- Material study and its Application
- 3D Visualization (sketches/views)

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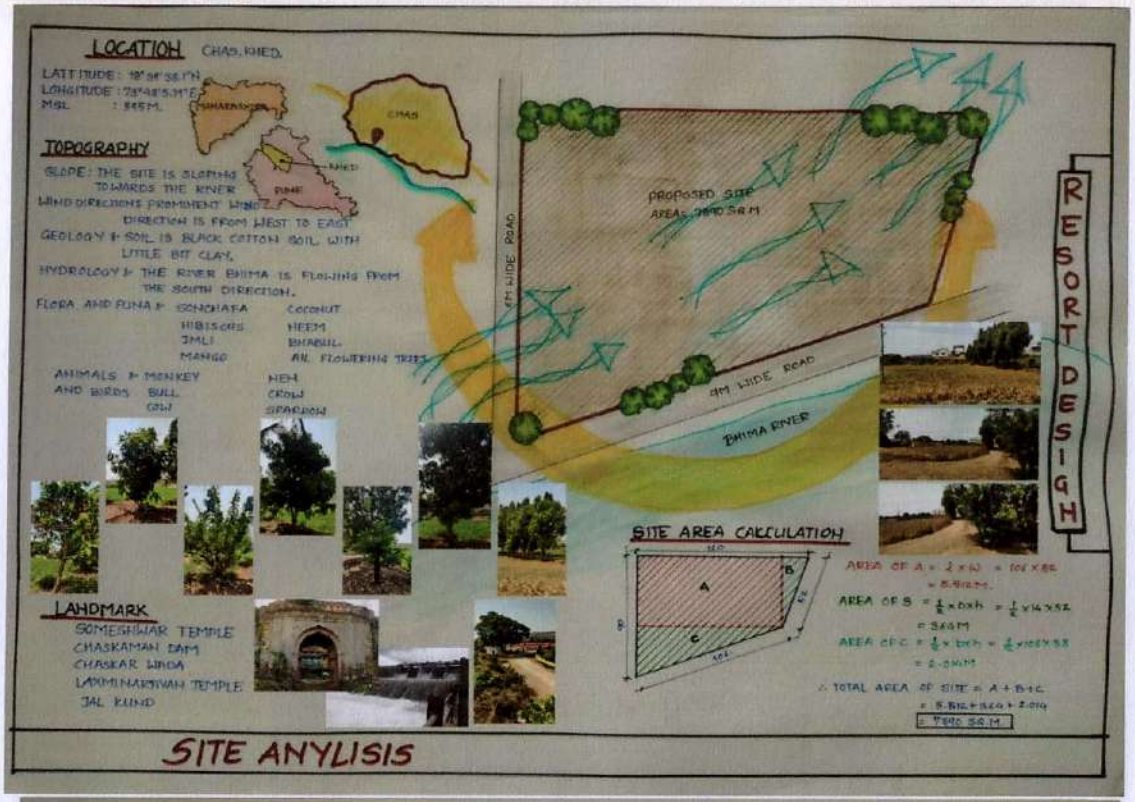

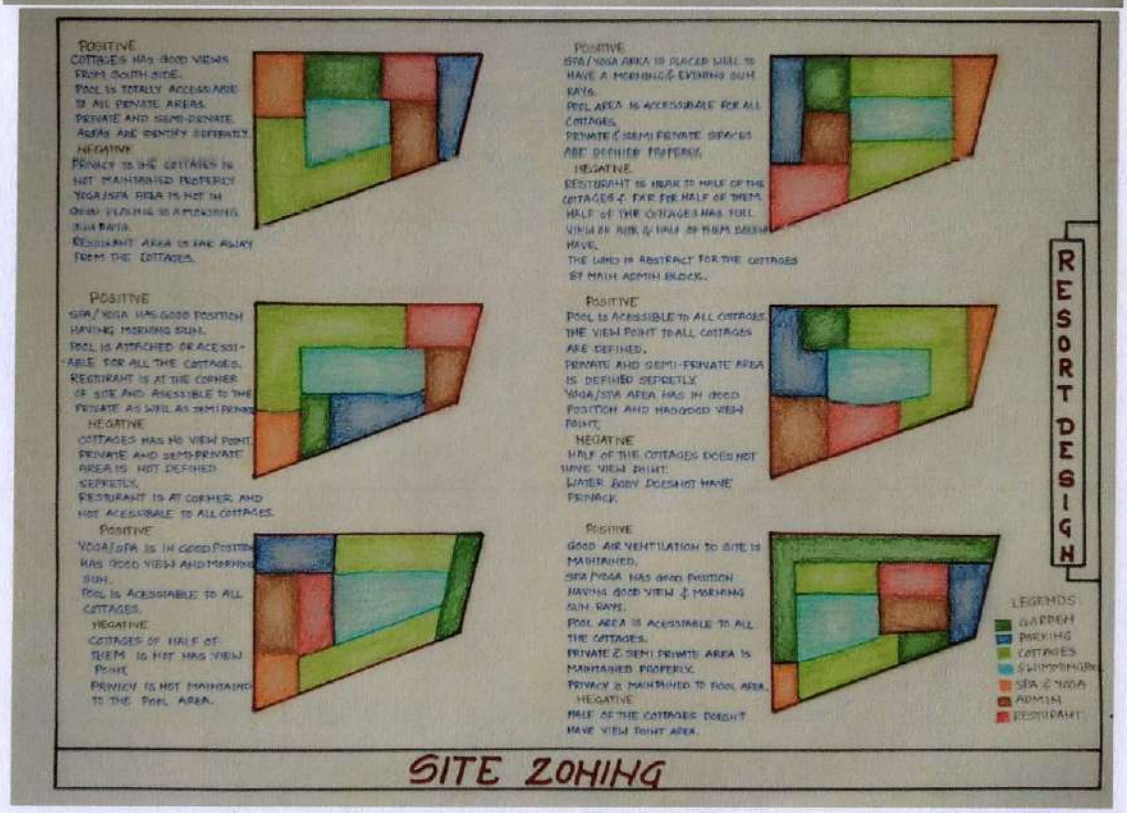

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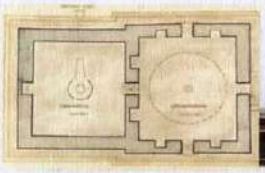
RESORT DESIGN

CONCEPT:-CONCEPT IS DEFINED AS ABSTRACT IDEAS OR GENERAL NOTATION THAT OCCURS IN THE MIND OR IN THOUGHTS. THEY ARE UNDERSTOOD OR TO BE THE FUNDAMENTAL BUILDING BLOCKS AND INTRODUCED ON OUR SITE. AS OF THE SOCIO-CULTURE CONCEPT PLAYS THE IMPORTANT ROLE IN MY DESIGN.

SOCIO-CULTURE:-

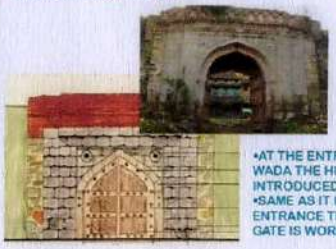
- THE SOCIO-CULTURE CONTAINS THE SOCIAL AND CULTURAL ELEMENTS OR THINGS, PLACES, MATERIALS,ETC. ARE FROM THAT LOCAL AREA.
- THE RESORT IS DESIGN FOR THE RELAXATION AND ACCOMMODATION FOR THE TOURISTS.
- THEREFORE, FROM THE SOCIO-CULTURE CONCEPT THE LOCALISE TOURISTS SPOTS, CULTURAL ACTIVITIES, MATERIALS, HISTORY, ETC. ARE INTRODUCED ON THE SITE.
- FROM WHICH THE TOURIST KNOWS THE ACTIVITIES OR TOURISTS SPOTS NEAR THE SITE.

- THE CHASKAMAN DAM BHIMA RIVER FLOWING OVER IT IS NEAR THE SITE FOR TOURIST TO VISIT ..
- THE WATER BODY IS CREATED ON SITE AS THE RIVER FLOWING FROM THE DAM.
- THUS, THE MAIN ELEMENT OF DAM IS CREATED FOR THE RIVER FLOWING FROM THE DAM AND WALL CONTAIN FOR THE GOOD VIEW POINT FROM THE SITE



- THE PLAN OF THE SOMESHWAR TEMPLE IS INTRODUCED FOR THE MAIN BUILDING BLOCK WHERE THE SOMESHWAR TEMPLE IS MAIN TOURIST SPOT IN CHAS.
- SABHAMANDAPPA IS WORKED AS A CENTRAL COURTYARD AND THE ADMIN AREA AND THE GARBHAGRIHA OF TEMPLE IS WORK AS A RESTAURANT'S KITCHEN.
- AT THE CENTRE OF COURTYARD THE DEEPMAAL IS INTRODUCED FOR THE AESTHETICAL PURPOSE.

- THECOMPOUND WALL AND BURUJ ARE ELEMENT FROM THE CHASKAR WADA IS INTRODUCED ON THE SITE.
- THAT COMPOUND WALL IS WORK AS THE COMPOUND WALL AS SEATING IS PROVIDED OVER IT FOR GOOD FOR THE GOOD VIEWS FROM THE TOP OF IT.
- BURUJ AT THE CORNERS ARE ALSO CREATED ON SITE.

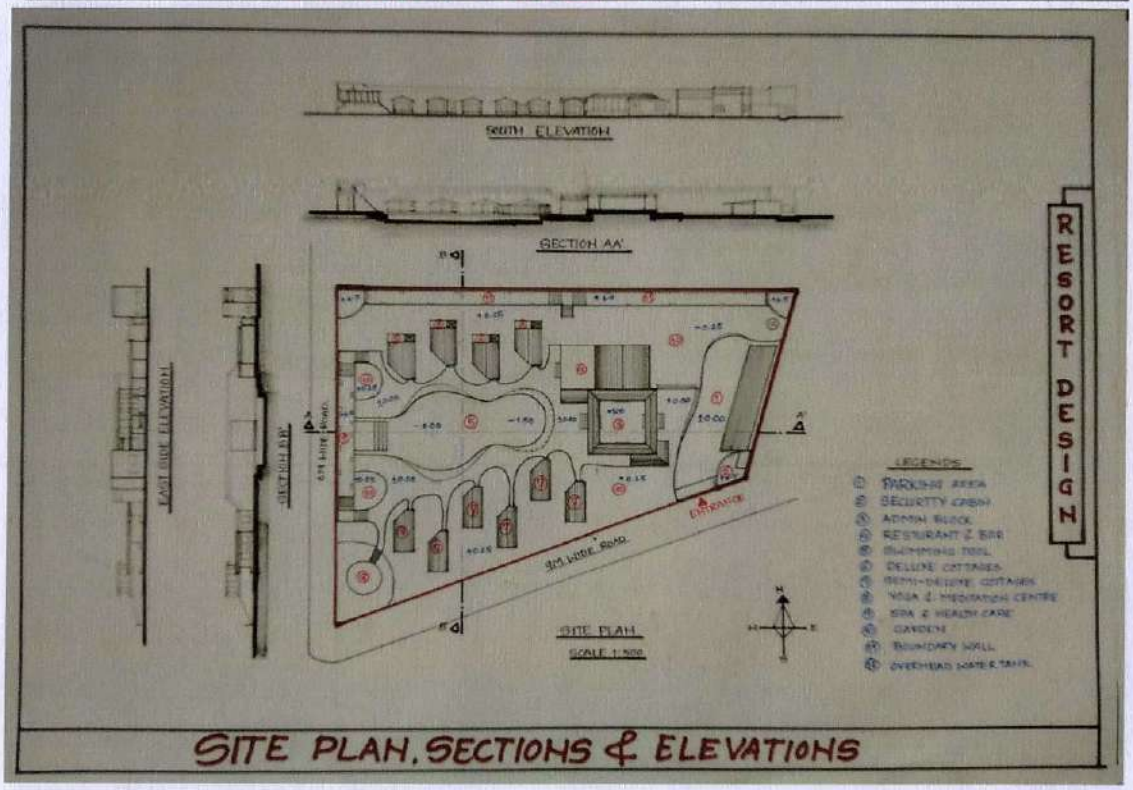


- AT THE ENTRANCE OF THE WADA THE HUGE MAIN GATE IS INTRODUCED.
- SAME AS IT IS AT THE ENTRANCE THE ENTRANCE GATE IS WORK AS IT.

- THE PLANNING OF THE COTTAGES OR BUILDING BLOCKS ARE PLACED STAGGERED IN ALTERNATIVE PATTERN.
- DUE TO STAGGERED PLANNING THE FLOWING OF AIR IS FOR AIR VENTILATION.

- THE BRIDGE INTRODUCED AT THE SITE VIEWS FROM WHERE THE RIVER BHIMA IS FLOWING.
- THE SAME AS BRIDGE IS INTRODUCED IN THE WATER BODY TO PASS FROM ONE SIDE TO ANOTHER.

DESIGN CONCEPT



SITE PLAN, SECTIONS & ELEVATIONS

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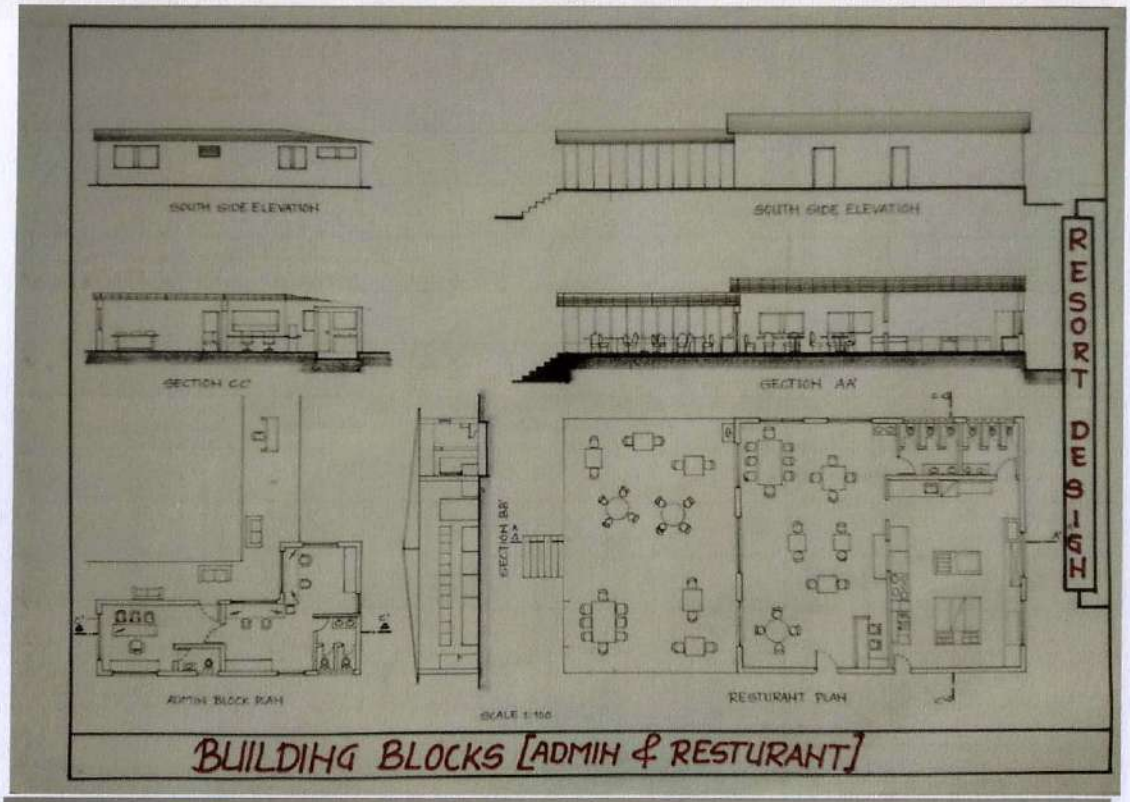
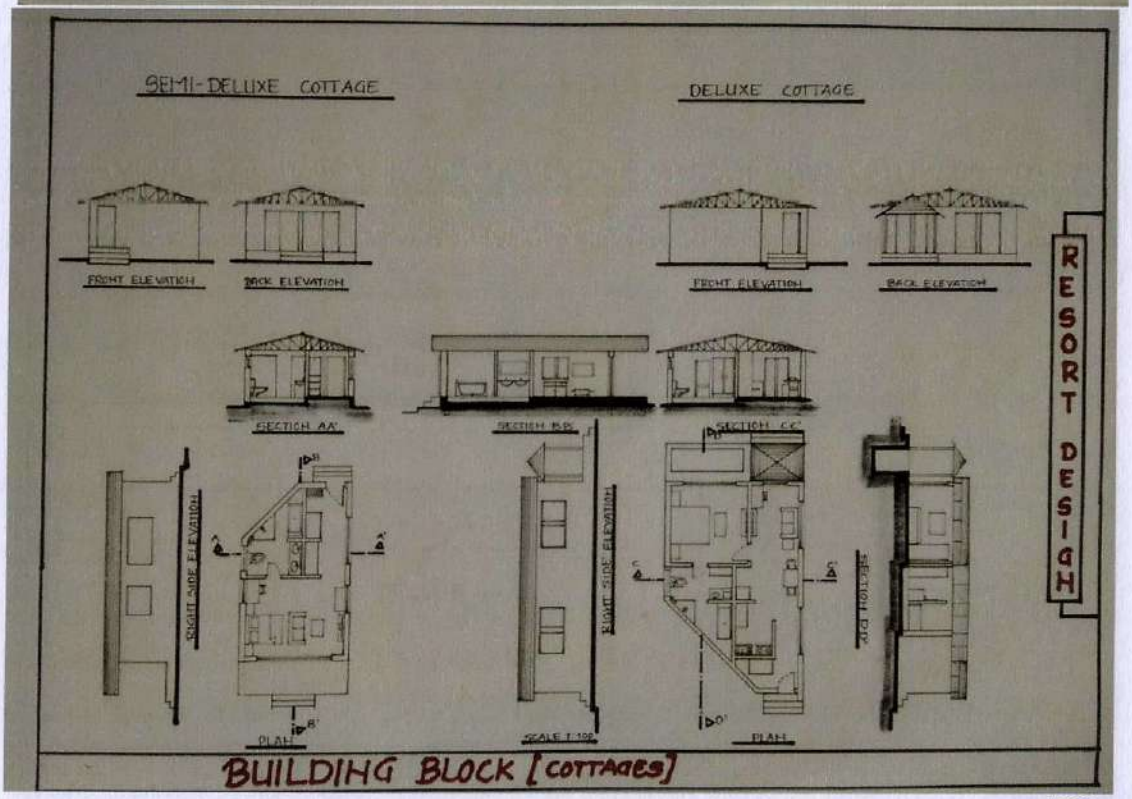


BUILDIHG BLOCKS [ADMIH & RESTURAHT]



BUILDIHG BLOCK [COTTAGES]

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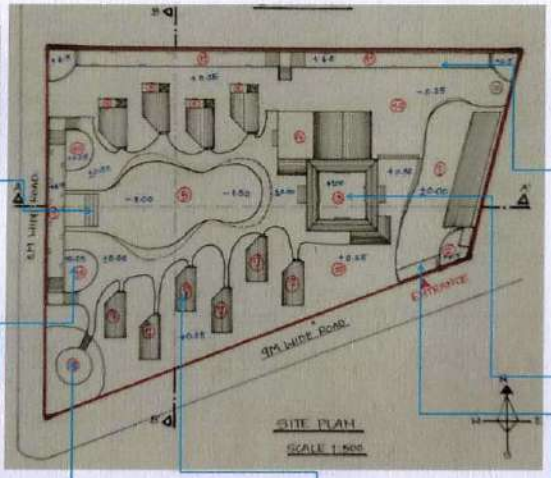
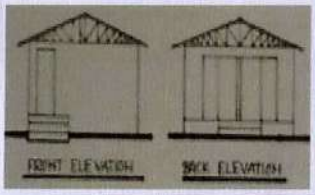
•As We Discuss In Concept The Chaskaman Dam In Introduced On Site.
•The Flow Of Water Is From Dam To The Water Body.

•Different Types Flowering Species Are Introduced On Site

•The Yoga And Meditation Centre Is Introduced.
•It Is At The Top Of The Site With Forming The Hill On Site.
•It Is For Direct Sunlight And Fresh Air At Morning.





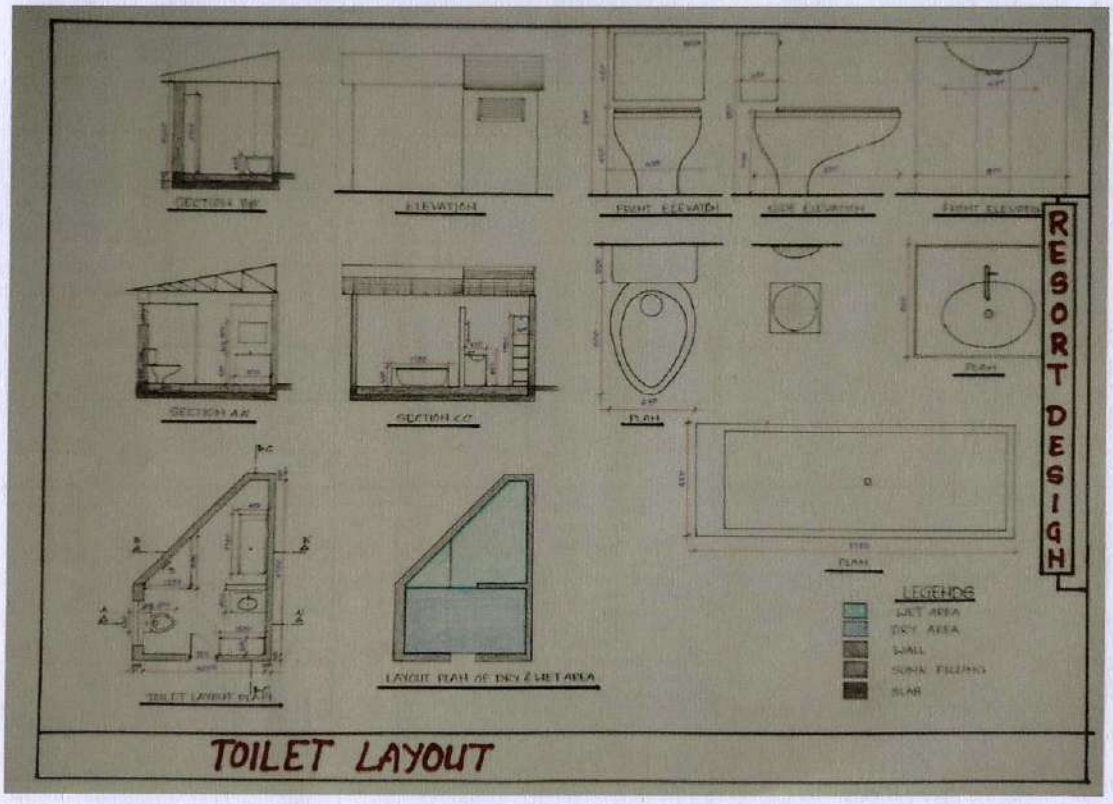
•Entrance Gate From The Chaskarwadi Is Introduced At The Entrance Of Site.
•It Has Also The Good Views From The Top Of The Entrance Gate.

•The Cottages Are Placed In Stragged Position.
•It Has Sloping Roof With Good Furniture Maintenance

•The Compound Wall And Buruj Is Created On The Site.
•It Functions The Security From North And Good Views to surrounding areas As Well As Some Interesting Functional Wall.

•The Deepmaal from the someshwar temple is Introduced At The Centre Of Main Courtyard.
•At The Night Time The Deepmaal Coloured With Full Lighting And Diyas.

SITE DETAILING



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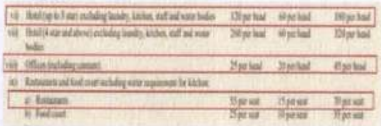
CALCULATIONS FOR WATER SUPPLY TO BUILDING BLOCK THROUGH THE WATER TANK.

The Water Requires For A Person In Daily Life As Per **Table No.01(NBC Water Supply)** As Shown Below:-



☐Calculations For Water Required For Building Blocks:

○Calculations For Cottages:-
No. Of Cottages On Site=10cottages
No. Of People In A One Cottage=2persons
Water Requires For A One Person In A Day=180lit
Total Water Require For A Customers Per Day Is
10cottages X 2peoples=20 Peoples.
20peoples X 180lit=3600lit/Day.

○Calculations For Admin Block:-
No. Of Staff In The Office=10persons
Water Requires For A One Person In A Day=45lit
Total Water Require For Staffs Per Day Is,
10 Persons X 45lit=450lit/Day

○Calculations For Restaurant:-
No. Of Seating At Restaurant For Customers Is=45persons
No. Of Staffs At Restaurant Is =25persons
Total Water Require For A Restaurant Per Day Is,
45seats+25staffs=70persons
70persons X 70lits=4900lits/Day

○Calculations For Landscaping:-
Lawn Area=75 X 20=1500m2
Water Requires For M2 Per Day=6lit
Total Water Require For Lawn Per Day Is,
1500m2 Lawn X 6lits=9000lits
Trees And Shrubs=4500m2
Water Requires For M2 Per Day=2lit
Total Water Require For Trees And Shrubs Per Day Is,
4500m2 Trees X 2lits=9000lit/Day
Total Water Required For Landscaping Is,
9000lits X 9000lits=18000lits/Day

☐Calculation For Dimension Of Water Tank:-

Total Water Required On Site,
Cottages=3600lits/Day
Admin Block=450lits/Day
Restaurant=4900lit/Day
Landscaping=18000lit/Day
Therefore,
3600+450+4900+18000=26950lit/Day

○Calculation For Overhead Water Tank:-
•1/3rd Of A Water Requires In A Day From OverheadTank. Therefore, 26950x1/3
=8983.33lits.

Assume The Depth Of Water Tank Is 1.2m

D=1.2m
1m3=1000lits
Therefore,8.983lits=8.9m3
Area Of Tank=8.9 / 1.2
=7.41
L X B=7.41m3

Now, B=2l
Lx2l=7.41
2l2=7.41
L2=3.7m
L=1.8m

Therefore, B=2l
B=2x1.8
B=3.7m

Therefore, The Dimension Of Overhead Water Tank Are Height=1.2m,length=1.8,width =3.7m.

○Calculation For Underground Water Tank:-
•2/.3 Of A Water Requires In A Day From The Underground Tank:
26950x2/3
17966.6lits.

Therefore, The Depth Of The Water Tank Is 1.5m,
D=1.8
1m3=1000lits
Therefore,17966.6lits=17.9m3
Area =17.9 / 1.8
=9.9m3
Lxb=9.9m3

Now, B=2l
Lx2l=9.9
2l2=9.9
L2=4.9m
L=2.4m

Therefore, B=2l
B=2x2.4
B=4.9m

Therefore, The Dimension Of Overhead Water Tank Are Depth=1.5m,length=2.4m,width= 4.9m.

RESORT DESIGN

WATER SUPPLY CALCULATION

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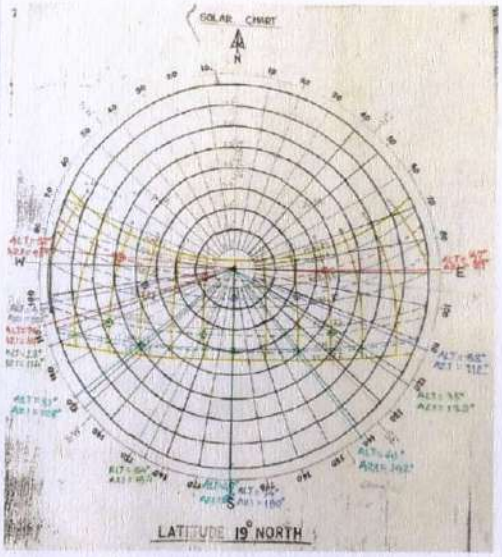


SOLAR CHART

HSA & VSA CALCULATIONS{EAST FACADE}

SEASONS	SUMMER		WINTER	
DATE	1ST APRIL	1ST MARCH	1ST JANUARY	1ST DECEMBER
TIME	9AM	10AM	9AM	10AM
ALT.ANG	45°	55°	32°	33°
AZI.ANG	90°	118°	128°	145°

HSA&VSA CALCULATIONS{SOUTH FACADE}

SEASONS	SUMMER		WINTER	
DATE	1ST APRIL	1ST MARCH	1ST JANUARY	1ST DECEMBER
TIME	1PM	12PM	1PM	12PM
ALT.ANG	73°	71°	49°	45°
AZI.ANG	119°	180°	158°	180°

HSA & VSA CALCULATIONS{WEST FACADE}

SEASONS	SUMMER		WINTER	
DATE	1ST APRIL	1ST MARCH	1ST JANUARY	1ST DECEMBER
TIME	4PM	3PM	4PM	3PM
ALT.ANG	32°	42°	20°	28°
AZI.ANG	90°	108°	119°	132°

RESORT DESIGN

CALCULATIONS OF SHADING DEVICES

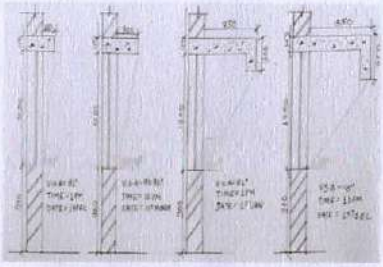
CALCULATIONS:{SOUTH FACADE}

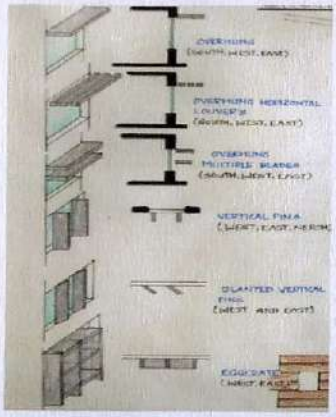
1] 1ST APRIL 1PM
H.S.A =WALL AZI-SOLAR AZI
=180-119
H.S.A= 61°
TAN x V.S.A = TAN x ALT.ANG / COS x H.S.A
=TAN(73) / COS(61)
= 6.74°
V.S.A=TAN⁻¹(6.74)
V.S.A=81.5°

2] 1ST MARCH 12PM
H.S.A =WALL AZI-SOLAR AZI
=180-180
H.S.A=0°
TAN x V.S.A = TAN xALT.ANG / COS x H.S.A
= TAN(71) / COS(0)
= 2.90°
V.S.A= TAN⁻¹(2.90)
V.S.A= 70.97°

3] 1ST JANUARY 1PM
H.S.A=WALL AZI-SOLAR AZI
=180-158
H.S.A=22°
TAN x V.S.A = TAN x ALT.ANG / COS x H.S.A
=TAN(49) / COS(22)
=1.25
V.S.A = TAN⁻¹(1.25)
V.S.A = 52°

4] 1st DECEMBER 12PM
H.S.A = WALL AZI-SOLAR AZI
= 180-180
H.S.A =0°
TAN x V.S.A = TAN x ALT.ANG / COS x H.S.A
=TAN(45) / COS(0)
=1
V.S.A= TAN⁻¹(1)
V.S.A = 45°





RESORT DESIGN

CALCULATIONS OF SHADING DEVICES

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•Main Structural Elements Are Constructed Of Metal For The Good Stable Structure.

•Mangalore Tiles Are Used As The Roofing Material.
•The Tiles Are Used Before Or Locally In That Area.

•The Ceramic Tiles Are Used In Toilets.
•The Ceramic Tiles Are Easy To Clean And Feel The Lavishness.
•Where Are Stone Is Bit Difficult To Clean.

•Stone Is Used For Wall As Well As Flooring Material.
•It Is Locally Available Which Is Removed From The River Basin.

•Wooden Joists Are Used For Ceiling.
•Metal Framing Is Polished With Wooden Texture As A Rafter And Other Ceiling Material.

•Wall Cladding Also Done At Some Places For Aesthetical Look.
•Natural Stone And Sandstone Are Used For Cladding.

•Windows And Doors Are Covered With Curtains For Privacy As Well As Dust.

•Doors And Windows Are Of Fully Glass Covered.
•Sliding Doors Are Used At The Back Side Of Cottages.
•Windows Are Also Are Of Sliding.

MATERIALS

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PRIMARY SCHOOL DESIGN AT BALEWADI, PUNE

Class Rooms:
Minimum size should be 8 m. x 6 m. (approximately 500. sq. ft.). There should be one room for each class. Minimum floor space should be at least 1 sq. mtr. per student.

Science Laboratory:
Composite for Secondary or/and separate Physics, Chemistry and Biology for Senior Secondary- minimum size should be 9 m. x 6m. each (approximately 600 sq. ft) and should be fully equipped.

Library:
Minimum size should be 14 m. x 8 m. fully equipped and with reading room facility and other resources to cater to the strength of students in the school.

Computer Laboratory:
Minimum size of computer laboratory should be 9 m x 6 m each (approx. 600 sq.ft.) The School should have a minimum of 20 computers and maintain computer to student ratio of 1:20.

Mathematics Laboratory:
The School should have separate provision for Mathematics Laboratory at least of the size of a regular class room.

Rooms for extracurricular activities:
Provide either separate rooms for music, dance, arts & sports etc. or one multipurpose hall of adequate size for all these activities.

Drinking water, Toilets and other Physical Facilities:
The School will provide adequate facilities for potable drinking water on each floor. The School should provide clean healthy and hygienic toilets on each floor with washing facilities for boys and girls separately in proportion to the number of students. The toilets for the primary students should be separate from other toilets. There should be separate toilets for staff members. The School shall provide proper facilities like, ramps in toilets and at entry/exit points for wheelchair users.

Playground:
Adequate ground to create outdoor facilities for at least 200-meter Athletics Track. Facilities for Kabbadi, Kho-Kho, Volleyball, basketball etc.

Grouping of spaces:
(a) Spaces can be broadly described as Teaching and Learning spaces (including the General Purpose Room), Administrative spaces and Ancillary spaces.
(b) Teaching and Learning spaces should be given priority with regards orientation, daylight and ventilation.
(c) The following rooms/spaces are frequently used by visitors/community and should be located so that it is not necessary to enter the general teaching areas most frequently used by students:

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- Principal's Office (if in schedule of accommodation).
- General Office. • General Purpose Room.
- Multi-Purpose Room.

Circulation:

(a) The design solution for the school should ensure ease of circulation and orientation for students, staff and visitors. On accessing the school via any entrance, it should be possible to move to any point in the school without meeting an area of congestion. The minimum clear width of corridors shall be 1.8m.Where a public access balcony is provided, designers in determining the balustrade height, should consider the risk associated with projectiles [school bags, books, and pupils] being dropped over the handrail. A height of not less than 1,400mm is recommended.

(b) Entrance lobbies should be secure controlled lobbies with a door control mechanism provided to the internal access doors of the lobby. Mat-well/matting carpet should be provided to the main front and rear entrance lobbies.

General requirements:

Design Considerations

(a) Natural day lighting should be exploited when designing rooms, to minimize the dependence on artificial lighting. Glare must be avoided. Windows for teaching spaces should have a horizontal vista.

(b) Ventilation should be natural ventilation by means of permanent wall vents and windows with opening sections. Vents should contain baffles for noise, wind and rain. The ventilation area provided through permanent vents (whether in walls or windows) and opening sashes shall be designed to suit the class environment having regard to the high levels of occupancy generally.

(c) Windows generally should be double glazed, easy to clean and maintain, and have high and low level opening sashes. The position and size of opening window sashes must take into account ease of operation, natural ventilation requirements and maintain an adequate level of safety. Stays or restrictors should be used on all opening windows both high and low level.

(d) Doors should be easy to open and close. Care should be taken in the design of the door, frame, and opening mechanism to protect against injury to fingers, etc. An adequate glazed viewing panel in the solid core door from all rooms to the corridors should be provided for the benefit of small children.

Planning of School Design- Universal design and user friendly

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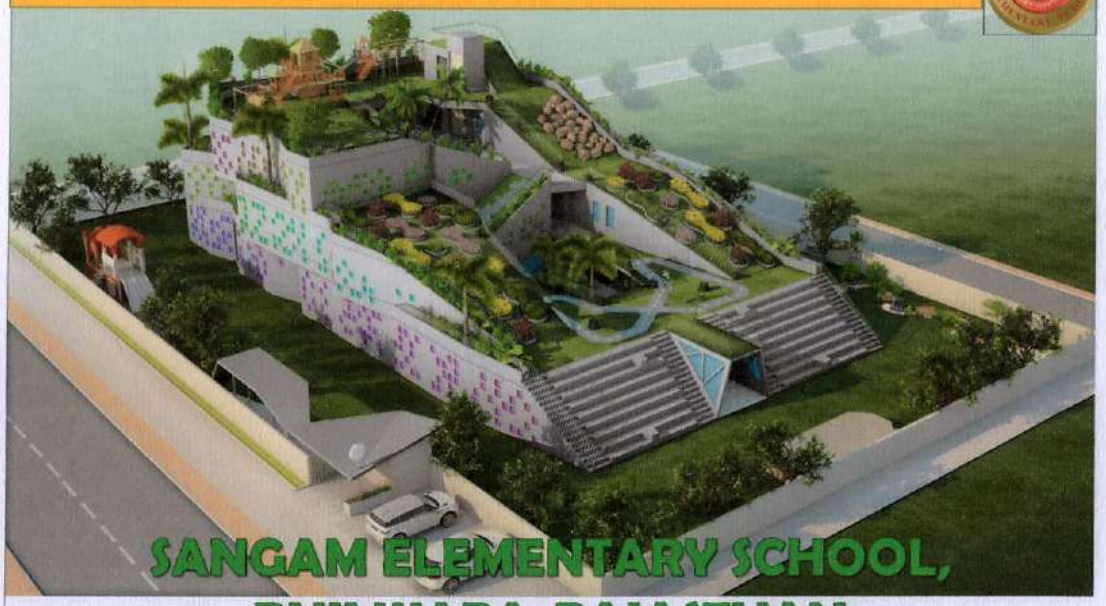
CASE STUDY



SANGAM ELEMENTARY SCHOOL, BHILWARA-RAJASTHAN

NAME- ABHISHEK D MOHALKAR SUBJECT- DESIGN-IV CLASS- T.Y B.ARCH ROLL NO- 2019109

CASE STUDY

SANGAM ELEMENTARY SCHOOL

PROJECT GENERAL INFORMATION

NAME:-	BHILWARA, RAJASTHAN, INDIA
LOCATON:-	SFERABLU ARCHITECTS
ARCHITECT:-	NAMAN SHAH, DHRUVEN
DESIGN TEAM:-	VADHWANA, TARJANI PARIKH, NINAD DEOLE, BINAL SHAH
AREA:-	2612 SQ.M
ESTABLISHED:-	2018

LOCATION MAP

CAMPUS FACILITIES

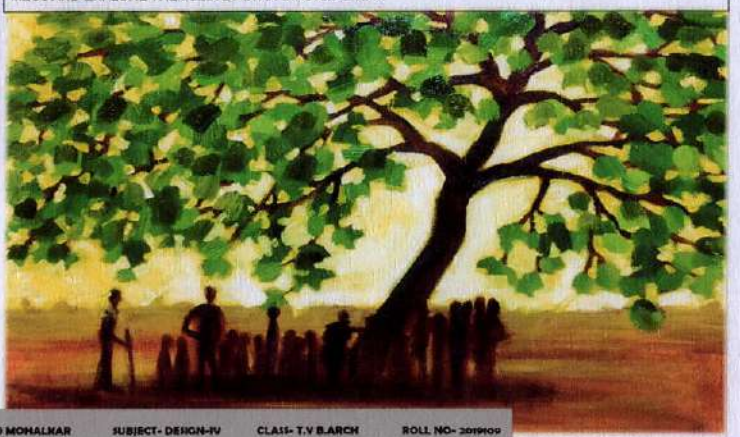
- PARKING
- FULLY AIR CONDITIONED BUILDING WITH 18 CLASSROOMS
- RIGHT BRAIN DEVELOPMENT LAB
- ART AND CRAFT ROOM
- GYNMASTICS ROOMS
- MULTI SKILLS HALL
- MUSIC ROOM COMPLETELY MONITORED WITH CCTV
- AMPHITHEATER
- CYCLING TRACK
- ROCK CLIMB AND HURDLES
- VEGETABLE GARDEN
- JUNGLE GYM

THE DESIGN INTENT

ENVIRONMENT TOGETHER BECOME A SUCCESSFUL TOOL FOR LEARNING; AND CREAT A SPACE THAT WOULD BRING A SMILE TO THE FACES OF THE THREE TO SEVEN-YEAR-OLD STUDENTS ARE AT THOUGHT OF GOING TO SCHOOL.

CONCEPT

IN OLDEN TIMES, STUDENTS WERE TAUGHT IN OPEN ENVIRONMENTS UNDER THE TREES. THEY HAVE BEEN INSPIRED BY THIS CONCEPT AS IT HELPS CHILDREN CONNECT WITH NATURE. IT IS A WONDERFUL WAY TO LEARN VARIOUS LIFE SKILLS, AND PRESENTS AN OPPORTUNITY FOR KIDS TO RUN, JUMP, SLIDE, MAKE A MESS AND EXPLORE THEMSELVES IN AN INFORMAL WAY.



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CASE STUDY — SANGAM ELEMENTARY SCHOOL

FORM

- THE FORM OF THE BUILDING WAS INSPIRED BY A TRIANGULAR CHEESE SLIVER WITH TINY HOLES ON ITS SIDES AS SEEN IN CARTOONS; LIKEWISE, THE EXTERNAL SURFACE OF THE BUILDING HAS MULTIPLE PUNCTURES.
- THE EXTERIOR FACADE HAS MANY TINY WINDOW PANELS TO MAINTAIN VISUAL CONNECTIVITY WITH NATURE AND THE SURROUNDINGS. THE SIZE OF THE WINDOWS IS SMALL TO ENSURE SAFETY AND POSITIONING IS DRIVEN BY THE HEIGHT OF THE STUDENTS. THE STUDENTS GET A VIEW OF THE OUTSIDE WHILE SITTING AT THEIR DESKS. EACH FLOOR IS STAGGERED WHICH CREATES SMALL PLANTERS AND GENERATES AN ORGANIC FORM OF THE STRUCTURE.

ARRANGEMENT OF THE TRIANGULAR FORM

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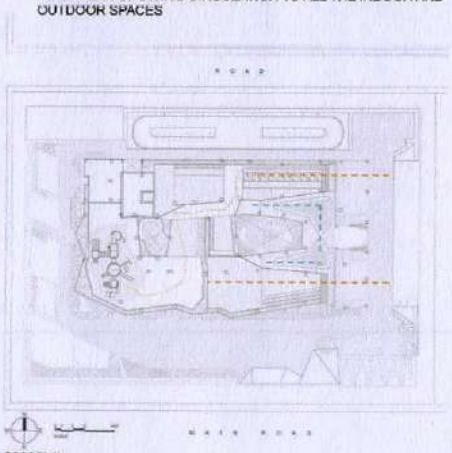
CASE STUDY — SANGAM ELEMENTARY SCHOOL

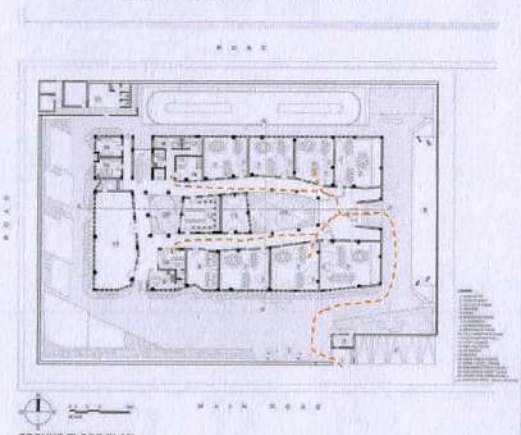
CIRCULATION

ROOF PLAN SHOWING CIRCULATION TO ALL THE INDOOR AND OUTDOOR SPACES



ROOF PLAN

GROUND FLOOR CIRCULLATION FROM ENTRY GATE TO INDOOR SPACES LIKE CLASSROOM STAFFROOM ETC



GROUND FLOOR PLAN

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CASE STUDY — SANGAM ELEMENTARY SCHOOL

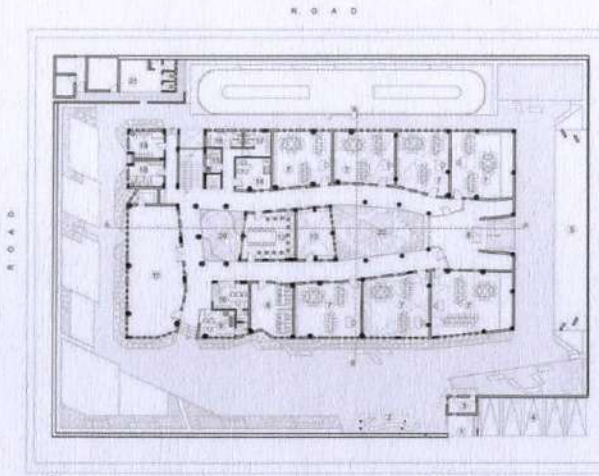
PLANNING


CLASSROOM


VEGETABLE GARDEN/COURTYARD


ENTRANCE FOYRE


MULTIPURPOSE HALL



GROUND FLOOR PLAN

LEGEND
1. MAIN ENTRY
2. PICKPOINT
3. SECURITY CABIN
4. PARKING
5. STAGE
6. ENTRANCE FOYER
7. CLASSROOM
8. ADMINISTRATION
9. PRINCIPAL'S CABIN
10. VICE PRINCIPAL'S CABIN
11. MULTIPURPOSE HALL
12. STAFF LOUNG
13. MEETING ROOM
14. INFIRMARY
15. PANTRY
16. STAFF TOILET-GENTS
17. STAFF TOILET-LADIES
18. CHILDRENS TOILET-BOYS
19. CHILDRENS TOILET-GIRLS
20. COURTYARD OPEN TO SKY
21. SUPPORT STAFF- TOILET-SEATING

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CASE STUDY — SANGAM ELEMENTARY SCHOOL

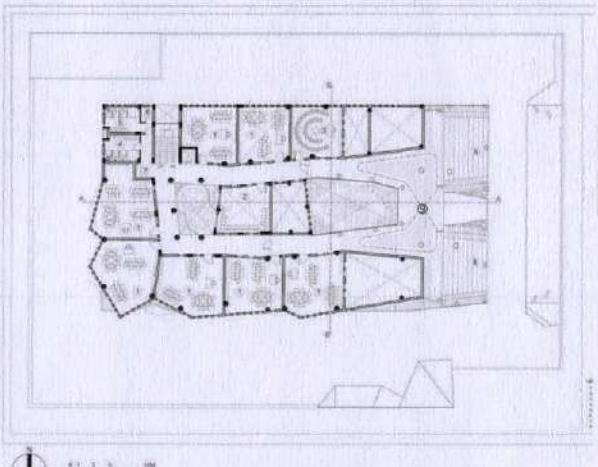
PLANNING


CLASSROOM


ART AND CRAFT ROOM


OPEN AIR THEATER


CYCLE TRACK


FIRST FLOOR PLAN

LEGEND
1. CLASSROOM
2. ART AND CRAFT ROOM
3. MUSIC ROOM
4. CHILDRENS TOILT-BOYS
5. CHILDRENS TOILET-GIRLS
6. STORE
7. WATER SPOUT
8. OPEN AIR THEATER
9. CYCLE TRACK

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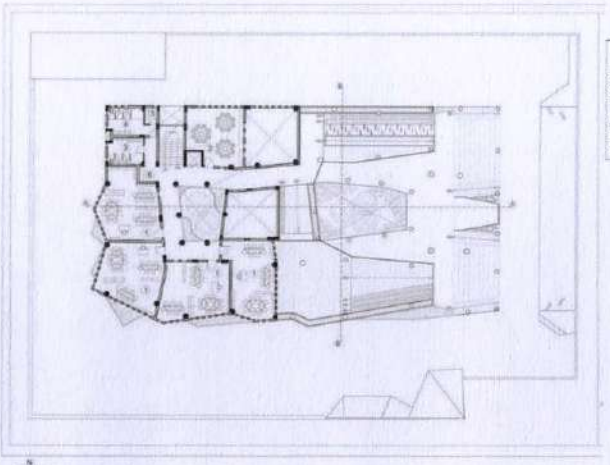
CASE STUDY — SANGAM ELEMENTARY SCHOOL

PLANNING


CLASSROOM


ACTIVITY ROOM



LEGEND
1. CLASSROOM
2. ACTIVITY ROOM
3. CHILDRENS TOILT-BOYS
4. CHILDRENS TOILET-GIRLS
5. STORE
6. WATER SPOUT

SECOND FLOOR PLAN

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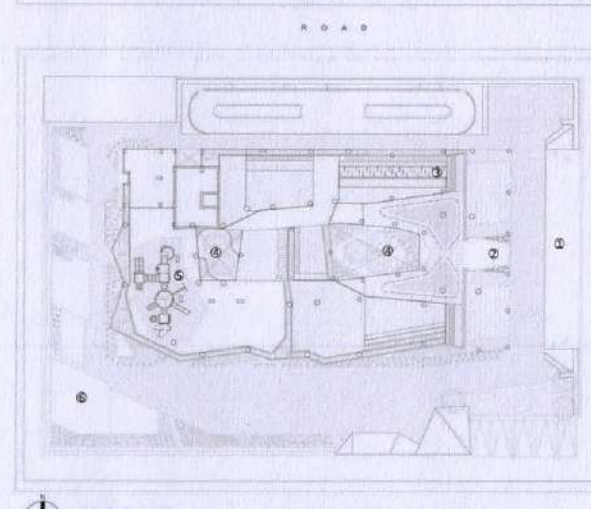
CASE STUDY — SANGAM ELEMENTARY SCHOOL

PLANNING


JUNGLE GYM


PLAY AREA



LEGEND
1. STAGE
2. OPEN THEATER
3. ROCK CLIMB AND HURDLES
4. COURTYARD
5. JUNGLE GYM
6. PLAY AREA

ROOF PLAN

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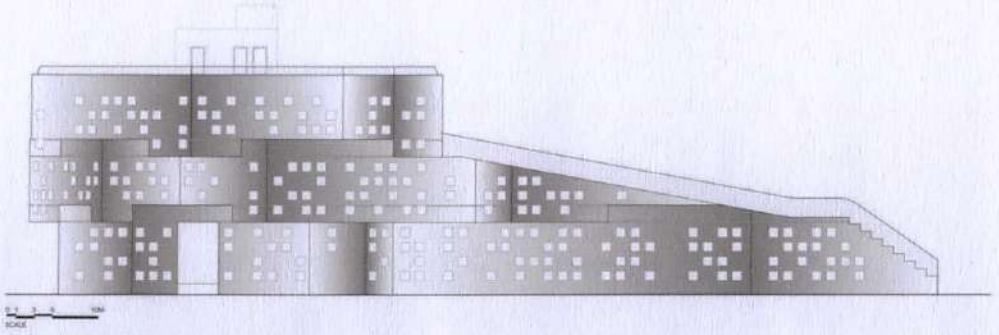
CASE STUDY — SANGAM ELEMENTARY SCHOOL

ELEVATION



SOUTH ELEVATION

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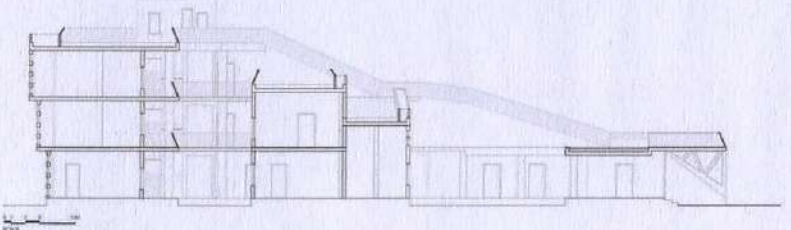
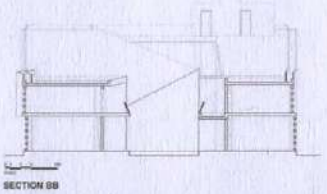
CASE STUDY — SANGAM ELEMENTARY SCHOOL

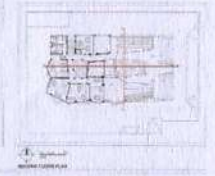
SECTIONS



SECTION AA



SECTION BB



KEY PLAN FOR SECTION LINE

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CASE STUDY — SANGAM ELEMENTARY SCHOOL

STRUCTURE

- AS THE RAJASTHAN IS IN HOT AND DRY CLIMATIC REGION SO NEED TO FRESH AND COOL AIR THROUGHT THE YEAR.
- THE PLANNING IS DONE WITH THE CONSIDERATION OF CLIMATIC CONDITIONS.
- THE BUILDING IS A THREE STORIED STRUCTURE. THE BUILT FORM IS HIGHLY PERFORATED AND HAS TWO COURTYARDS WHICH PERMIT FILTERED DAYLIGHT TO SEEP INTO THE CORRIDORS. THE COURTYARDS HELP REDUCE THE HEAT GAIN AND PROVIDE EFFICIENT AIR CIRCULATION IN THE ENTIRE BUILDING, WHICH IS ESSENTIAL FOR THE HARSH CLIMATIC CONDITIONS OF THE REGION. WITH THE AIR AND DIFFUSED LIGHT THAT ENTER FROM THE TOP, THE INNER PORTION OF THE BUILDING REMAINS COOL AND WELL-LIT.
- ALL THE CLASSROMS AND OTHER AREAS ARE COMPLETELY AIR- CONDITIONED BY CENTERILIZED AIR-CONDITIONING SYSTEM

COURTYARD

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CASE STUDY — SANGAM ELEMENTARY SCHOOL

STRUCTURE

- FROM A DISTANCE, THE BUILDING LOOKS LIKE A SLOPING GARDEN. NEAR THE MAIN ENTRANCE IS AN OPEN AMPHITHEATER WHICH IS USED FOR ACTIVITIES SUCH AS MORNING PRAYERS, DRAMAS AND PERFORMANCES. THE SIZE OF THE PLOT AND SPACE NEEDED FOR THE PROJECT LEFT LIMITED PERIPHERAL SPACE FOR ESSENTIAL OUTDOOR ACTIVITIES. THIS MADE US REPURPOSE THE ROOF OF THE ENTIRE BUILDING INTO A SLOPING GARDEN INTERCONNECTING EACH FLOOR. THE FLAT AREA OF THE ROOF IS USED AS A CYCLING TRACK.

VIEW FOR SLOPING ROOF

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CASE STUDY — SANGAM ELEMENTARY SCHOOL

STRUCTURE

- THE FIRST SLOPE HAS TWO HUGE CUSTOM-MADE SLIDES; THE SECOND SLOPE, WHICH IS THE LONGEST SLOPE IN THE BUILDING, HAS OBSTACLE COURSES; AND THE THIRD SLOPE, WHICH HAS ENOUGH SUNLIGHT, HAS PLANTERS, ONE KITCHEN GARDEN FOR EACH CLASS TO GROW THEIR OWN VEGETABLES AND FLOWERS. THIS CREATES A SPECIAL BOND BETWEEN THE CHILDREN AND THE NATURE AROUND THEM. THE TOPMOST PART OF THE ROOF HAS A JUNGLE GYM WHERE THEY CLIMB AND SWING WITH A VIEW OF THE ENTIRE CITY BEYOND.

VIEWS FOR SLOPING ROOF

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CASE STUDY — SANGAM ELEMENTARY SCHOOL

MATERIALS

- THE WHOLE CONSTRUCTION IS DONE IN R.C.C.
- MATERIAL USED FOR THE FLOORING INDOOR IS CERAMIC TILES.
- FOR OUTDOOR FLOORING LIKE CYCLING TRACKAND PLAY AREA THE SYNTHETIC FLOORING AND RUBBER FLOORING IS USED AND FOR OUTDOOR PAVING IBLOCKS ARE USED.
- FOR WINDOW ALUMINIUM MATERIAL IS USED.
- FOR GLAZING OF THE WINDOWS THE DOUBLE GLAZED PANELS ARE USED THOSE GLASS PANELS ARE VARIOUS COLOURS LIKE PINK, BLUE, GREEN.

VIEWS/PHOTOGRAPHS

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CASE STUDY — SANGAM ELEMENTARY SCHOOL

INFERENCES

- THE RELATION OF THE CONCEPT AND FORM ON WHICH THE DESIGN IS DONE IS GOOD.
- SPACE UTILIZATION IS GOOD.
- CLIMATIC ASPECT OF DESIGN IS MOST IMPORTATNT AND THAT IS ACHIEVED.
- THE COMBINATION OF DOUBLE HEIGHT AND SINGLE HEIGHT SPACES IS DONE PROPERLY.
- THE PATTERN OF SLOPING ROOF AND PLACEMENT OF THE SPACES BELOW THEM IS DONE PROPERLY AND LOOKS AESHTETICALLY GOOD.
- THE WINDOWS PATTERNS CREATED ON THE ALL THE WALLS IS MAINTAINING THE VISUAL WEIGHT OF THE FAÇADE.
- CIRCULATION BETWEEN ALL THE SPACES IS GOOD.
- THE DIFFERENCE BETWEEN THE FLOORS IS PROPERLY DIFFERENTIATED AND CONNECTED BY SLOPING ROOF IS ALSO BEST.AMPHITHEATER DESIGNED ON THAT SLOPIN ROOF IS VERY WELLL.
- OVER ALL DESIGN IS DONE BY CONSIDERING THE USERS.





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DATA COLLECTION - SCHOOL

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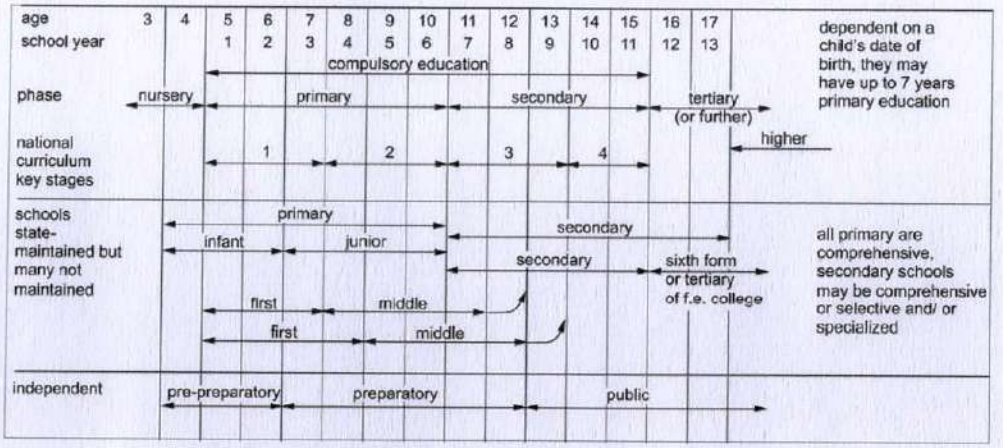
DATA COLLECTION- SCHOOL

Types of school, age range and national Curriculum stages



SOURCE- Metric Handbook

DATA COLLECTION- SCHOOL

PROVISION OF VARIOUS AREAS IN SCHOOLS OF DIFFERENT CATEGORIES

SR NO	AREAS	CATEGORY
	COMPULSORY AREAS FOR PRIMARY SCHOOL	
1	CLASSROOM	CURRICULAR
2	SOCIAL SCIENCE /GEOGRAPHY ROOM	CURRICULAR
3	CRAFT ROOM	CO-CURRICULAR
4	LIBRARY	CO-CURRICULAR
5	PRINCIPALS ROOM	ADMINISTRATIVE
6	PLAY GROUND	EXTRA CURRICULAR
	ADDITIONAL AREAS FOR PRIMARY SCHOOL	
1	ART/DRAWING ROOM	CURRICULAR
2	LABS	CURRICULAR
3	SCIENCE ROOM	CURRICULAR
4	CRAFT ROOM	CURRICULAR
5	CANTEEN	CO-CURRICULAR
6	MEDICAL ROOM	CO-CURRICULAR
7	BOOK SHOP	CO-CURRICULAR
8	STUDENTS ROOM	CO-CURRICULAR
9	VICE PRINCIPALS ROOM	ADMINISTRATIVE
10	OFFICE	ADMINISTRATIVE
11	STAFF ROOM	ADMINISTRATIVE
12	GENERAL STORE	ADMINISTRATIVE

SOURCE- I.S 8827-1978

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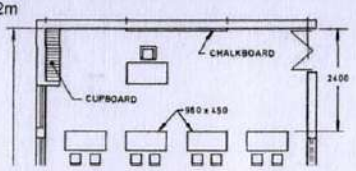
DATA COLLECTION- SCHOOL

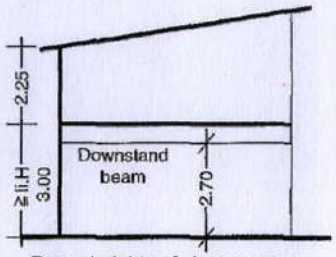
➢ CLASSROOM

- The basic unit of a school is classroom. The classroom, apart from satisfying the minimum requirements of space, fittings and furniture, shall be designed to meet the adequate functional and environmental requirements.
- The size of a classroom shall depend on the following:
  a) Anthropometric dimensions of children and their space requirements;
  b) Dimensions, arrangements of furniture and equipment and their incidence;
  c) Number of students to be accommodated;
  d) Types of activities to be carried out; and
  e) Diverse seating arrangements essential for these activities.
- The number of classrooms in a school and the number of sections per class should depend upon the size and level of school and use efficiency of spaces.
- The classroom should be designed for the following number of student places- 40 Student each classroom.

➢ ESSENTIAL CONSTRUCTION REQUIREMENTS:-

- Height o f the classroom should not be less than 3'00 m measured at any point from the surface of the floor to the lowest point of the ceiling. The minimum headroom such as under the bottom of beams, fans and lights shall be 2'6 m measured vertically under such beam, fan or light.
- The proportion of the breadth (minimum dimension) to the length (maximum dimension) of the classroom should be not more than 1 : 1-5.
- Sill Heights — The sill height for classrooms with furniture arrangement should be not more than 800 mm measured from finished floor level and that for the classrooms with squatting arrangement should be not more than 600 mm.
- Rooms shall have, for the admission of light and air, one or more apertures, such as windows and fanlights, opening directly to the external air or into an open verandah. The minimum aggregate areas of such openings excluding doors inclusive of frames shall be not less than 20 percent of the floor area in case such apertures are located in one wall and not less than 15 percent of the floor area in case such apertures are located on both side walls at the same sill level.
- The minimum clear distance between chalkboard and front edge of the first row of desk when chalkboard is in use is 2.2m



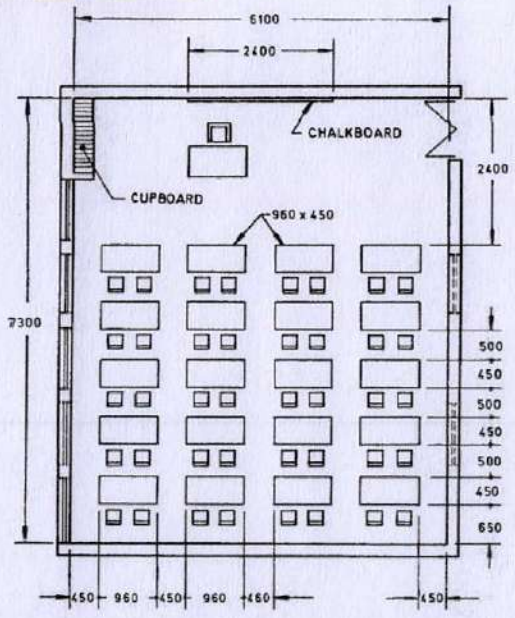


Room heights of classrooms

SOURCE- I.S 8827-1978

DATA COLLECTION- SCHOOL

➢ CLASSROOM



All dimensions in millimetres.

TYPICAL LAYOUT OF CLASSROOM WITH FURNITURE ARRANGEMENT

SOURCE- I.S 8827-1978

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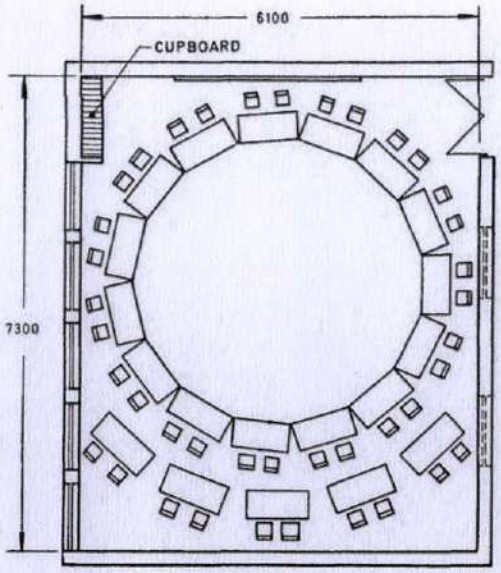
DATA COLLECTION- SCHOOL

➢ **CLASSROOM**



All dimensions in millimetres.

TYPICAL LAYOUT OF CLASSROOM WITH ALTERNATE FURNITURE ARRANGEMENT

SOURCE- I.S 8827-1978

DATA COLLECTION- SCHOOL

➢ **CLASSROOM**

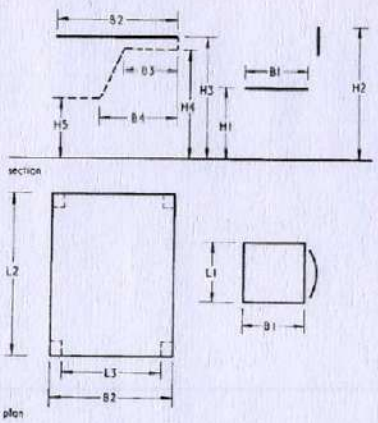
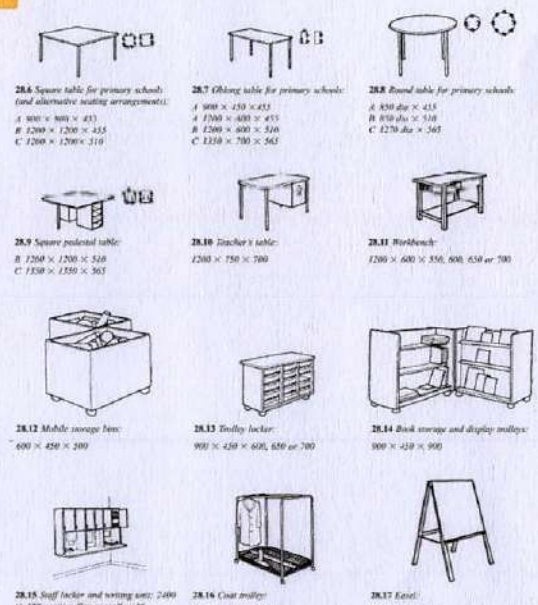


Table 1 Furniture size available through a commerical supplier (see 28.5)

	A	B	C	D	E
Color code	White	Yellow	Red	Blue	Green
Stature range					
Approx. ages	3–5	5–8	7–11	10–14	11+
Chair seat height H1	280	320	355	390	430
Table top height H3	500	550	600	650	700



28.6 *Square table for primary schools (and alternative seating arrangements):*
A 800 × 800 × 433
B 1200 × 1200 × 435
C 1200 × 1200 × 510

28.7 *Oblong table for primary schools:*
A 900 × 450 × 455
A 1500 × 600 × 455
B 1500 × 600 × 510
C 1350 × 700 × 565

28.8 *Round table for primary schools:*
A 850 dia × 455
B 850 dia × 510
C 1270 dia × 565

28.9 *Square pedestal table:*
B 1200 × 1200 × 510
C 1350 × 1350 × 565

28.10 *Teacher's table:*
1500 × 750 × 700

28.11 *Workbench:*
1200 × 600 × 550, 600, 650 or 700

28.12 *Mobile storage bins:*
600 × 450 × 500

28.13 *Trolley locker:*
900 × 450 × 600, 650 or 700

28.14 *Book storage and display trolleys:*
900 × 450 × 900

28.15 *Staff locker and writing unit: 2400 × 550, writing flap overall width 500 mm, height 1200 mm*

28.16 *Coat trolley:*
1400 × 1000 × 650

28.17 *Easel:*
800 × 1200 high

FURNITURE LAYOUT AND DIMENSIONS

SOURCE- Metric handbook

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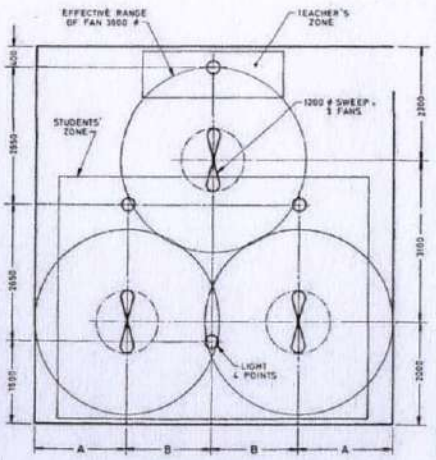
DATA COLLECTION- SCHOOL

➢ CLASSROOM

CLASS ROOM FITTINGS TABLE

Sr. No	Fittings	Number of units	Area	Remark
1)	**Essential Fittings:**			
A)	Chalkboard	1	1.2M X 2.4M	Its base should be 800 mm above the floor/platform level. The location of the chalkboards should be on the walls adjacent to the window wall and placed such that the mid-vertical line of the board lies between one-half and two thirds the depth of the room. This is to ensure that the glare due to windows at students' seat area is minimized.
B)	Cupboard	1	1.5 SQ.M	Its depth should not be less than 450 mm. It would serve as space for storage of maps, display materials, etc.
C)	Pin-Board	-	-	here should be one or more near the chalkboard area or on the side walls to display maps, charts, students work, etc.
2)	**Fittings When Needed**			
A)	Fan	3	1.2 M dia	Arrangement of fans and lights in 1 classroom is shown in plan.
B)	Lights	4	-	
C)	Students' Desks	Depends upon the number of seats to be provided and whether the desks are single or double		
3)	**Desirable Fittings**			
A)	Wooden Picture rail	1	Length = Length of wall	The rail should be provided on the wall opposite to windows or opposite to chalkboard
B)	Students lockers	Each for 1 student	-	A locker for each student may be provided in case such an arrangement in students' desks is not possible.



All dimensions in millimetres.

Class room	A	B
Primary	1 600	1 450
Secondary	1 800	1 650

TYPICAL ARRANGEMENT SHOWING FAND AND LIGHT POINTS IN PRIMARY AND SECONDARY SCOOLL

SOURCE- I.S 8827-1978

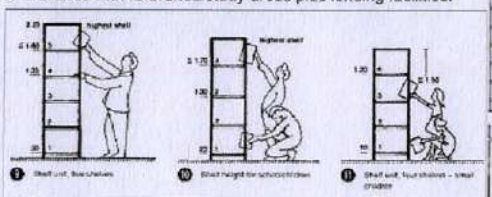
DATA COLLECTION- SCHOOL

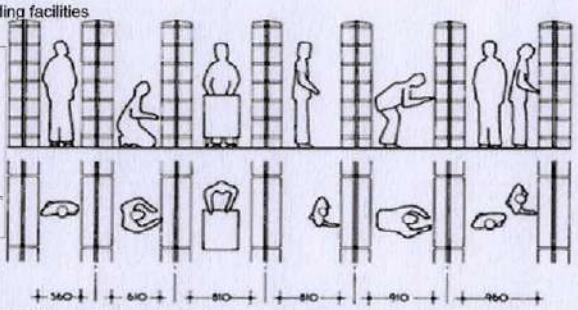
➢ LIBRARY

Library denotes a conventional school and lending library including lending, reading and work spaces and the appropriate shelves for books and magazines.

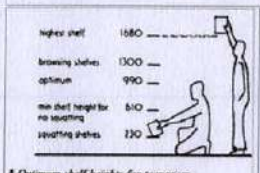
Types of library librarioc are of three basic types:

1. Lending librarion with minimal or no reader areas
2. Reference libraries with large reader areas and few or no lending facilities
3. Libraries with reference/study areas plus lending facilities.



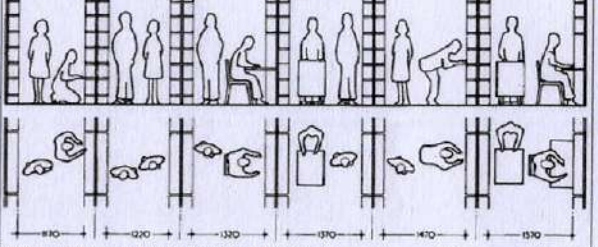


32.8 *Minimum clearances in shelving areas for various attitudes: narrow aisles*

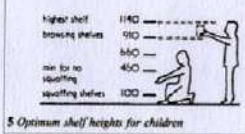


4 *Optimum shelf heights for teenagers*

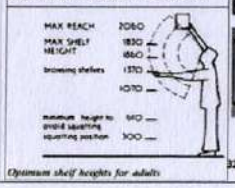
Body clearance: maintenance reach levels



32.9 *Minimum clearances in shelving areas for various attitudes: wide aisles*



5 *Optimum shelf heights for children*



Optimum shelf heights for adults

SOURCE- Neuferts Metric handbook

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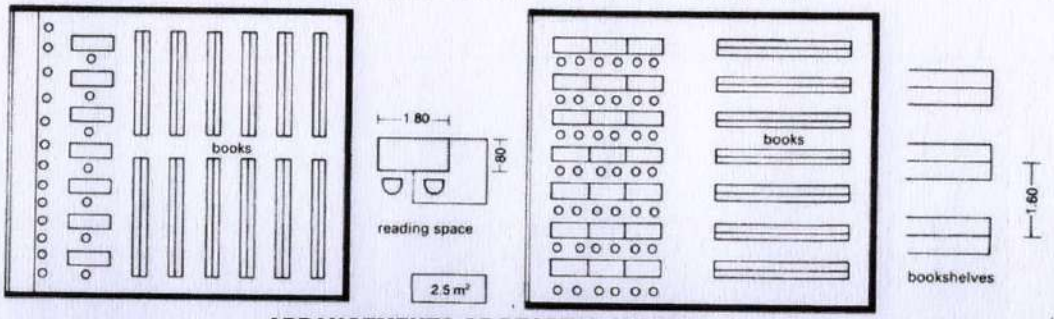
DATA COLLECTION- SCHOOL

➢ LIBRARY

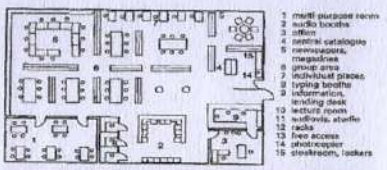
- The provision of work spaces in college libraries depends on the number of students and distribution of individual subject group.
- The area required for simple reading place is 2.5 SQ.M for PC or individual work place more than 4.0 SQ.M.



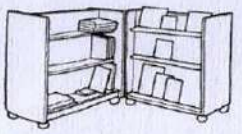
ARRANGEMENTS OF READING SPACES

➢ MEDIA CENTER AND CENTRAL FACILITY

- Information center for teaching, further education and leisure. The users are pupils, teachers and external participants. Media center describes the extension of the library to cover recording and reproduction technology (hardware) for radio, film, television, cassettes, tapes, CD, DVD, i.e. so-called audio-visual material and a corresponding stock of software.



EXAMPLE OF SCHOOL MEDIA CENTER



28.14 *Book storage and display trolleys: 900 × 450 × 900*

SOURCE- Neuferts

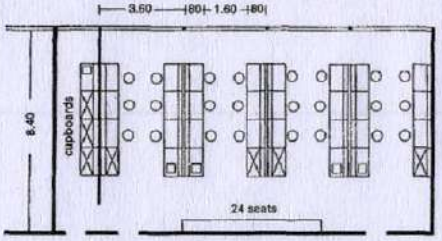
DATA COLLECTION- SCHOOL

➢ LABORATORIES:-

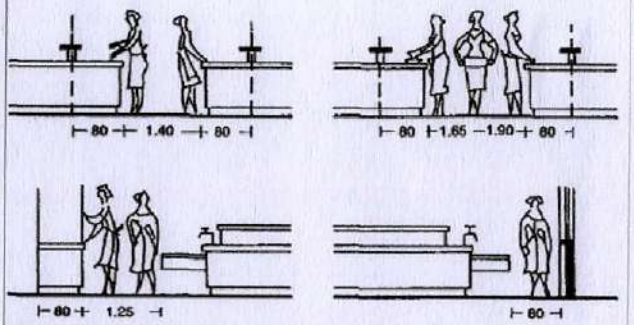
The size of the science laboratories depends on the following:

A) Dimensions of children and their space requirements,
B) Flexibility of arrangement and multiuse of spaces,
C) Usefulness of the wall area, and
D) Interrelationship of auxiliary spaces

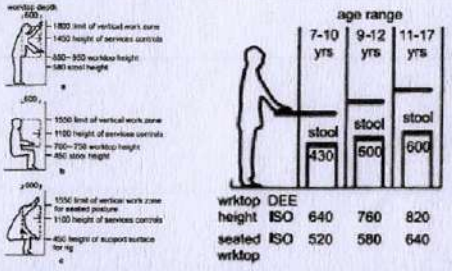
- The science laboratories should be designed for 24 seats.
- The social science room, art room, crafts room and activity room may be Designed for 40 students but the area required for these should be more than the area for the ordinary classroom for 40 students.



TYPICAL SEATING ARRANGEMENT OF LABORATORIES



1 Minimum passage width at workstations



38.1 *Limits of reach in various situations. The heights of service controls specified may have to be reduced in practice, but the reduction should be minimized. a Standing or sitting on a high stool. b Seated on a chair. c Seated and working on a high rig*

2 *Standing and sitting heights for schools*

SOURCE- I.S 8827-1978

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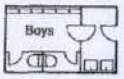
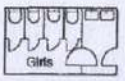
DATA COLLECTION- SCHOOL

➢ SANITARY FACILITIES/TOILETS

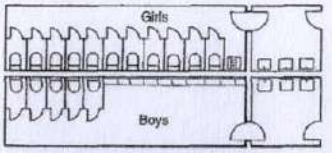
- The necessary WCs, urinals and washbasins are provided according to the total number of pupils (divided between boys and girls) according to the school building guidelines.
- One washbasin is provided for every boys' WC or for every two girls' WCs. Toilets should be as directly lit and ventilated as possible. The accesses for girls and boys are to be separate.



Lesson-time WC facilities, e.g. for approx. 100 boys, approx. 15 m²



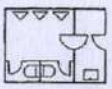
e.g. for approx. 100 girls, approx. 15 m²



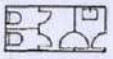
Break-time WC facilities, e.g. single-row facilities for approx. 250 girls, approx. 40 m²; for approx. 250 boys, approx. 40 m²

No. users	WC	Urinals
40 boys	1	2
20 girls	1	–
15 teachers	1	1
10 women teachers	1	–

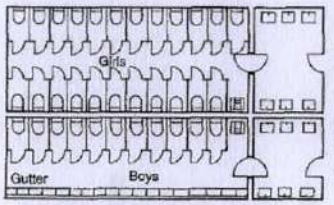
Guideline for number of sanitary facilities (Saxony → refs)



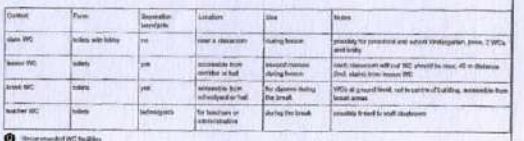
Teacher WC facilities, e.g. for approx. 30 teachers, approx. 15 m²



e.g. for approx. 20 women teachers, approx. 10 m²



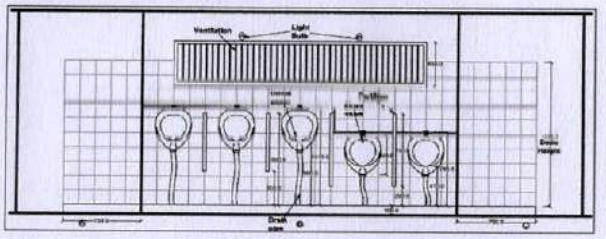
Break-time WC facilities e.g. two-row facilities for approx. 500 girls, approx. 65 m²; for approx. 500 boys, approx. 40 m²

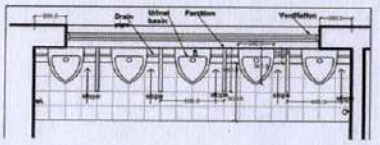


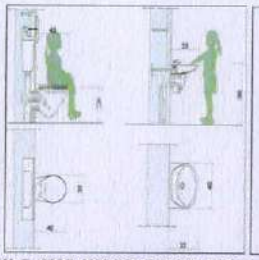
SOURCE- Neuferts

DATA COLLECTION- SCHOOL

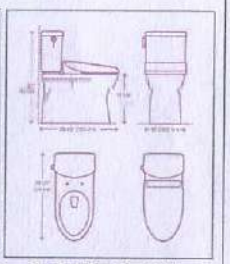
➢ SANITARY FACILITIES



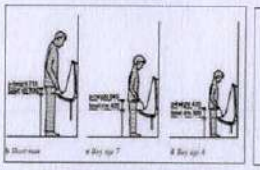




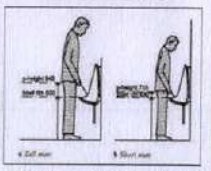
W C AND WASH BASIN FOR GIRLS/BOYS



W C FOR STAFF GENTS/LADIES

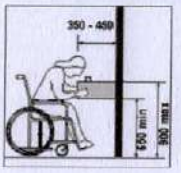


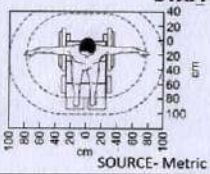
URINALS FOR BOYS



URINALS FOR GENTS STAFF

- The minimum width of a single urinal bay should be 600 mm with minimum depth 450 mm. A privacy/ modesty guard should be provided between two urinals.
- The modesty guard should be placed at a height of 350 mm above the floor up to a height of 950 mm.
- The urinal bay should have a minimum depth of 750 mm and 100 mm high platform.
- The depth of 450 mm shown is applicable for all urinals.
- The height of the urinal for children below 10 years of age should be 410 mm (flush valve at 765 mm) and for above 10 years should be 660 mm(flush valve at 1015 mm).
- Dado cladding should extended horizontally up to 1500 mm on walls of the urinals.
- The edges and corners of the wall should be chamfered to increase safety.





SOURCE- Metric handbook

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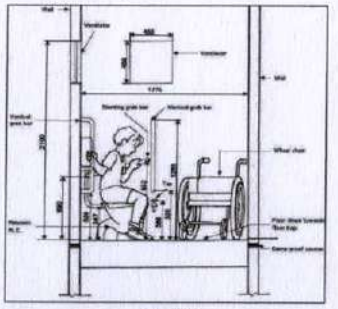
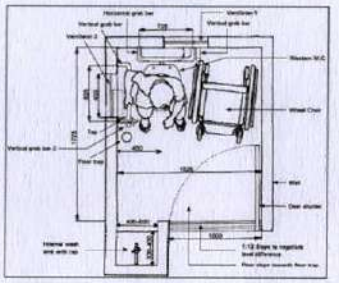
DATA COLLECTION- SCHOOL

➢ SANITARY FACILITIES FOR PHYSICALLY CHALLANGED STUDENTS:-

•The toilet block itself needs to be easily accessible by children with special needs from the main school block. Many a times, there are many obstacles such as level difference, unpaved areas which make navigation of wheel chair difficult. These obstacles also need to be removed.
•One special W C In a set of toilets shall be provided for the use of differently disabled with essential provision of washbasin near the entrance for the handicapped.
•This design is applicable for girls as well as boys toilet.
•Ventilators with appropriate size should be located to allow the space to dry.
•Internal floor slope should be towards a floor trap to drain off excess water so that there is no accidental slippage.
•The tap must be accessible as shown.
A) The minimum size shall be 1500 mm. X 1750 mm.
B) Minimum clear opening of the door shall be 900mm and the door shall swing out.
C) suitable arrangement of vertical/horizontal handrails with 50 mm. Clearance from wall shall be made in the toilet.
D) The W C Seat shall be 500mm. From the floor.
E) Location of internal horizontal and vertical grab bars is shown (with horizontal lengths 828 & 728 mm) to assist the users while using and transferring from the wheelchair to the seat and vice versa.



SECTION



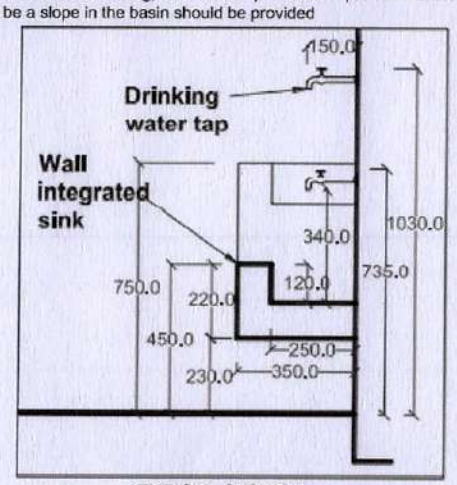
PLAN

SOURCE- Metric handbook

DATA COLLECTION- SCHOOL

➢ DRINKING WATER FACILITIES:-

- Suitable provision of drinking water shall be made for the differently disabled near the special toilet provided for them.
- A shade with an overhang of minimum 300 mm above the drinking water taps should be provided.
- The height of tap should be at 1030 mm and 735 mm heights from the floor for ease of access by different age groups.
- There should be a minimum of 600 mm distance between the taps.
- A dado should be up to height of 1500 mm from the floor level.
- Edges and corners of the wall should chamfered to increase safety
- To prevent water from overflowing, a 10 mm drop should be provided at the edge of the platform .
- There should be a slope in the basin should be provided



TYPICAL SECTION

SOURCE- I.S 8827-1978

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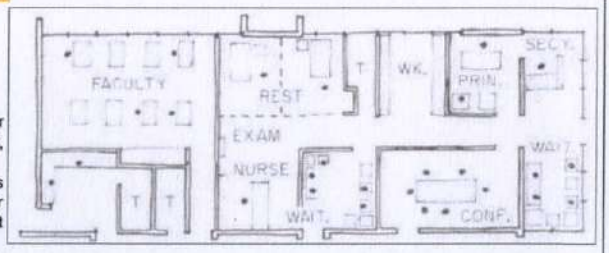
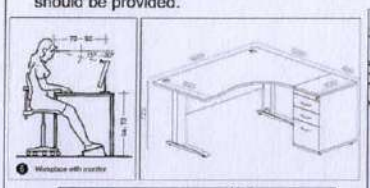
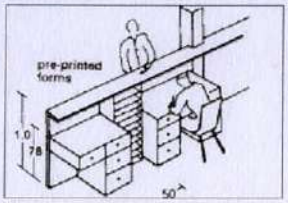
DATA COLLECTION- SCHOOL

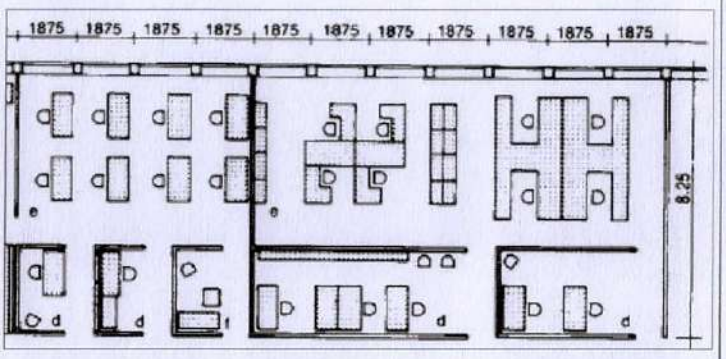
➢ ADMINISTRATIVE SPACES

- **Principal Office** – An area of about 10 m2 may be provided for a room for headmistress/headmaster of the school.
- Another area of 10 m2may be provided for general storage.
- **General Office** – Apart from the working space for general office staff, it should provide space for fee collection, student's contact, parent's contact, etc.
- The IT workplaces are designed according to the guidelines for computer workplaces. The upper edge of the monitor should be below eye level so that the pupil's head is tilted at 15-20°
- **Teaching Staff Area** – Staff common room which may contain facilities for lockers for all teachers, office tables and chairs, easy chairs and a separate toilet facility for staff should be provided.







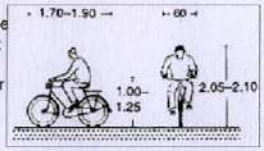


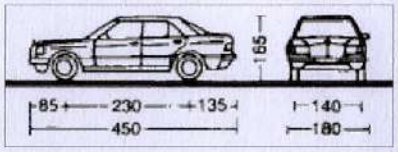
SOURCE- METRIC HANDBOOK

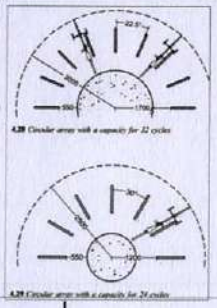
DATA COLLECTION- SCHOOL

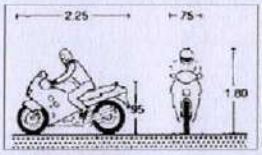
➢ OUTDOOR AREAS

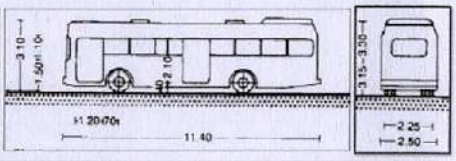
- **PARKING** for the following should be provided when designing a school building:
  a) Cycles At the rate of 1 • 1 m2 per cycle
  b) Scooters At the rate of 3 m2per scooter
  c) Cars At the rate of 25 m2per car
  d) Buses At the rate of 60 m2per bus

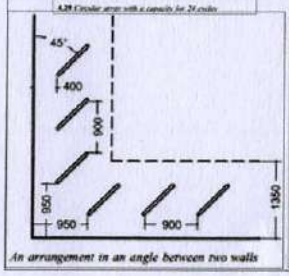




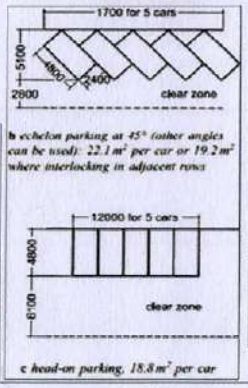




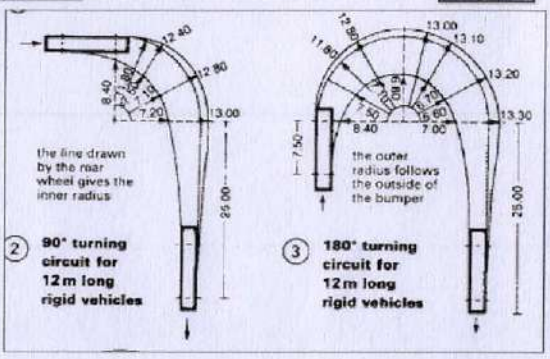




An arrangement in an angle between two walls



c head-on parking, 18.8 m² per car



SOURCE- METRIC HANDBOOK

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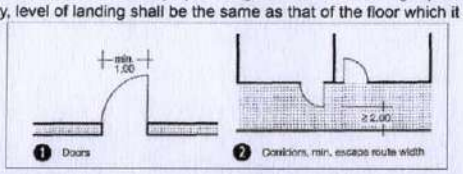
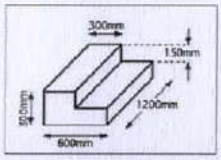
DATA COLLECTION- SCHOOL

➢ EXIT

1) DOORWAYS

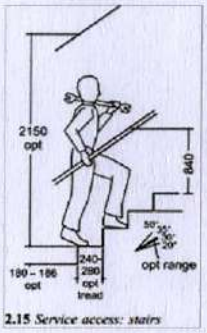
- ✓ Every exit doorway shall open into an enclosed stairway, a horizontal exit, on a corridor or passage way providing continuous and protected means of egress.
- ✓ No exit doorway shall be less than 100 cm in width. Doorways shall be not less than 200 cm in height. Doorways for bathrooms, water-closet, etc. shall be not less than 75 cm wide.
- ✓ Exit doorways shall open outwards, that is, away from the room but shall not obstruct the travel along any exit. No door, when opened, shall reduce the required width of stairway or landing to less than 90 cm; overhead or sliding doors shall not be installed.
- ✓ Exit door shall not open immediately upon a flight or stairs; a landing equal to at least the width of the door shall be provided in the stairway at each doorway, level of landing shall be the same as that of the floor which it serves.





2) STAIRWAYS

- ✓ Interior stairs shall be constructed of non-combustible materials throughout.
- ✓ Interior staircase shall be constructed as a self-contained unit with at least one side adjacent to an external wall and shall be completely enclosed.
- ✓ A staircase shall not be arranged round a lift shaft unless the latter is entirely enclosed by a material of fire resistance rating as that for type of construction itself
- ✓ Hollow combustible construction shall not be permitted.
- ✓ The minimum tread shall be 30 cm. The treads shall be constructed and maintained in a manner to prevent slipping.
- ✓ The maximum height of riser shall be 15 cm. They shall be limited to 12 per flight.
- ✓ Handrails shall be provided with a minimum height of 90 cm from the center of the tread.
- ✓ The minimum headroom in a passage under the landing of a staircase and under the staircase shall be 2'2 m.



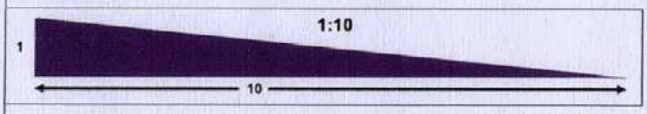
2.15 *Service access: stairs*

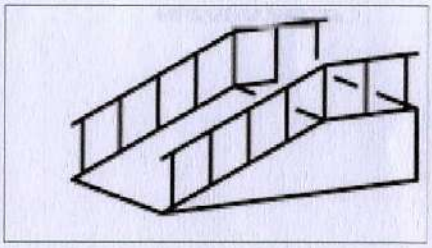
SOURCE- I.S 8827-1978

DATA COLLECTION- SCHOOL

➢ RAMPS

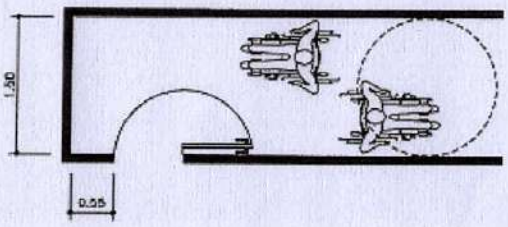
- ✓ Ramps with a slope of not more than 1 in 10 may be substituted for and shall comply with all the applicable requirements of required stairways as to enclosure, capacity and limiting dimensions. Ramps shall be surfaced with approved non-slipping materials.
- ✓ Ramps shall lead directly to outside open space at ground level or courtyards or safe places.

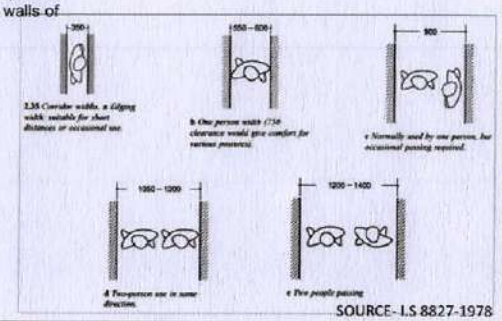




➢ CORRIDOR

- ✓ The minimum width of a corridor shall not be less than 150 cm and actual width shall be calculated based on the provisions given above.
- ✓ In case of more than one main staircase of the building interconnected by a corridor or other enclosed space, there shall be at least one smoke-stop door across the corridor or enclosed space between the doors in the enclosing walls of any two staircases.





SOURCE- I.S 8827-1978

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DATA COLLECTION- SCHOOL

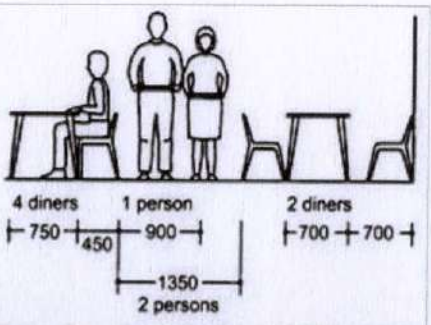
➢ CANTEEN

number of seats	table size: drinking mm	table size: eating mm
1	450 to 600	600 to 700
2	600 square	750 square
4	750 square	900 × 950
	–	1500 × 750
6	–	1400 × 900
	–	1700 × 750
8	–	1750 × 900
	–	2300 × 750

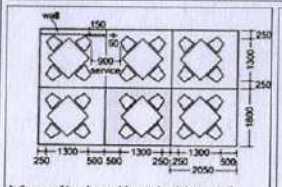
18.6 *Recommended rectangular table sizes relating to place numbers*

number of seats	table size: drinking mm	table size: eating mm
1	450 to 600	750
2	600	850
4	900	1050
6	1150	1200
8	1400	1500

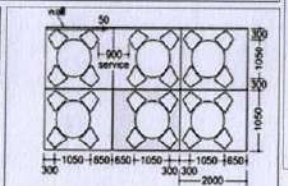
18.7 *Recommended circular table sizes for various place numbers*



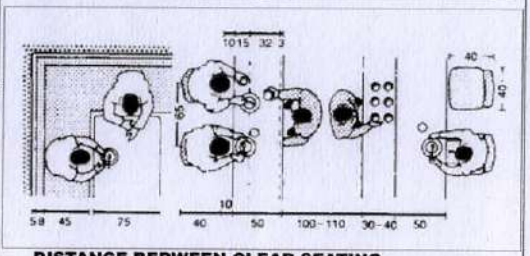
18.12 *Minimum space between tables to allow for seating, access and circulation*



b *Square tables, diagonal layout, local density 0.92*



c *Circular tables, diagonal layout, density 0.82*



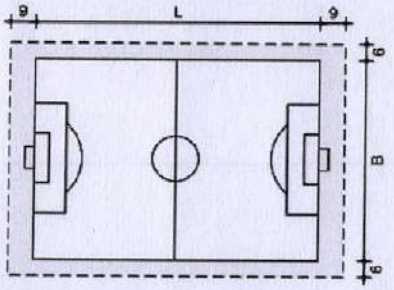
DISTANCE BERWEEN CLEAR SEATING

SOURCE- METRIC HANDBOOK

DATA COLLECTION- SCHOOL

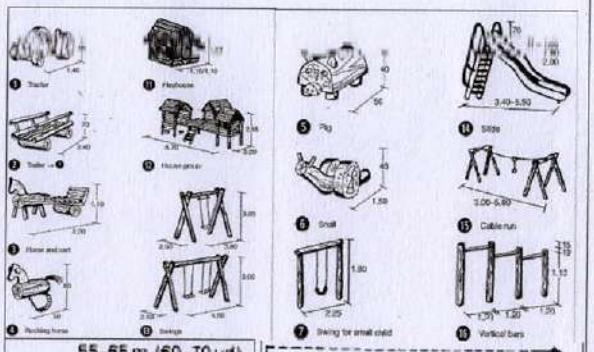
➢ OUTDOOR AREAS

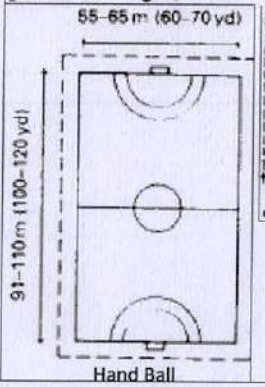
- Outdoor areas for school such as playgrounds, open assembly, parking, etc. shall depend upon the following:
  a) The size o f the school, and b) The location of the school, that is: 1) Urban, 2) Suburban, or 3) Rural.
- For outdoor spaces under lawns, courtyards, etc. an area of 1 m2 per student should be provided.
- It is desirable to make a provision for play fields for all categories of schools.
- In primary school 4000m2 area should be adequate for playing games like cricket, football, hockey and other Indian games.



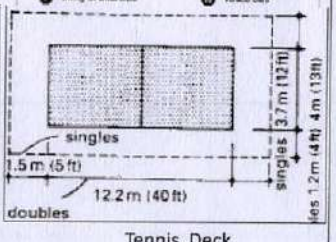
24.26 *Football, Association (Soccer). The NPFA gives the following recommended sizes:*

	L	B
International:	*100–110 m*	*64–75 m*
Senior:	*96–100 m*	*60–64 m*
Junior:	*90 m*	*45–55 m*





Hand Ball



Tennis Deck

SOURCE- I.S 8827-1978

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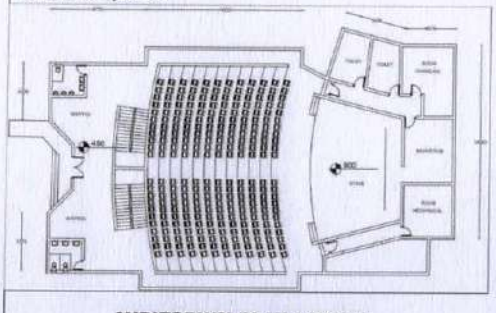
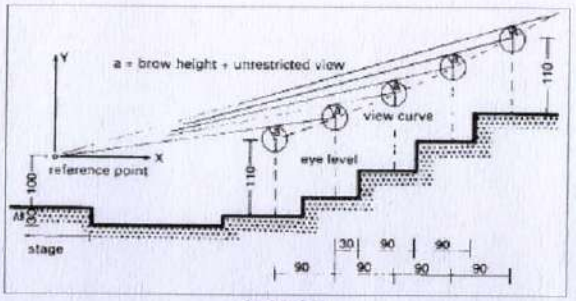
DATA COLLECTION- SCHOOL

➢ AUDITORIUM

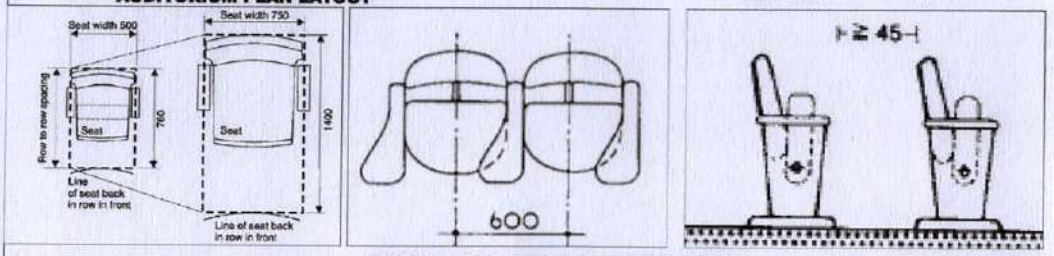
The three – dimensional volume of an auditorium is conditioned by the need for all members of the audience to be able to see whole of the platform or stage and to hear the actor, singer, musician or speaker.



AUDITORIUM PLAN LAYOUT



SECTION



SEATING ARRANEMENTIN AUDIORIUM

SOURCE- METRIC HANDBOOK

DATA COLLECTION- SCHOOL

➢ EXTRA REQUIREMENTS

- **Set-Back Lines** — In the absence of local building byelaws the minimum set backs of the building from the boundaries shall be as follows
  a) Front set-back 15 meters b) Side set-back 6 meters.
- **Selection Of Site** —While selecting the site of school buildings, the following points should be kept in mind:

✓ a) Easy accessibility from residential areas;
✓ b) Site should be away from heavy traffic roads, rivers, ponds, railway tracks, etc.
✓ c) Site should be away from high tension lines;
✓ d) The land should not be of made-up ground unless precautions have been taken for stabilization;
✓ e) Site should ensure a good natural drainage; and
✓ f) The site should preferably be at a quiet place away from places generating noise and pollution, such as cinemas, factories and shopping centers

➢ Types of Exits

✓ Exits shall be either of horizontal or vertical type. An exit may be a doorway, corridor, an internal or external staircase, ramps or verandahs and/or terraces which have access to the street or to the roof of a building. An exit may also include a horizontal exit leading to an adjoining building at the same level.
✓ Lifts and escalators shall not be considered as exits.
✓ **Number and Size of Exits** — The requisite number and size o f various exits shall be provided, based on the number of students and staff in each room area and floor, capacity of exits, travel distance and height of buildings according to provisions .
✓ **Arrangement o f Exits** — Exits shall be so located that the distance from an exit to the most remote point in the floor area served by them, measured along the line of travel shall in no case be greater than 30 meters, except that where sprinklers are installed throughout a building the maximum distance of travel to an exit may be increased by 50 percent.
✓ Wherever more than one exit is required for a floor of building, exits shall be placed as remote from each other as possible. All the exits shall be accessible from entire floor area at all floor levels.
✓ **Capacity o f Exits**—The capacity of exits (doors and stairways) indicating the number of persons that could be safely evacuated through a unit exit width of 50 cm shall be as given below:
a) Stairways 25 Numbers b) Doors 75 Numbers
✓ There shall be a minimum of two staircases and one of them shall be an enclosed stairway and the other shall be on the external walls of buildings and shall open directly to the exterior, interior open space or to any open place of safety.
✓ Notwithstanding the detailed provision for exits as above the minimum width for stairways shall be 2.00 meters.

SOURCE- I.S 8827-1978

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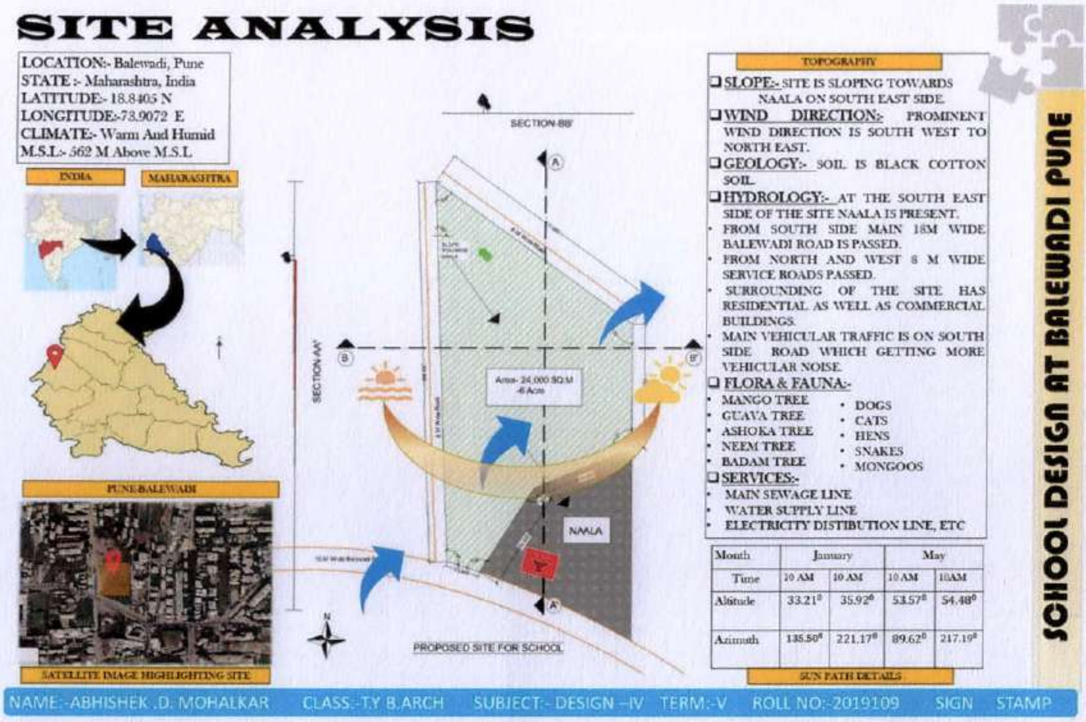
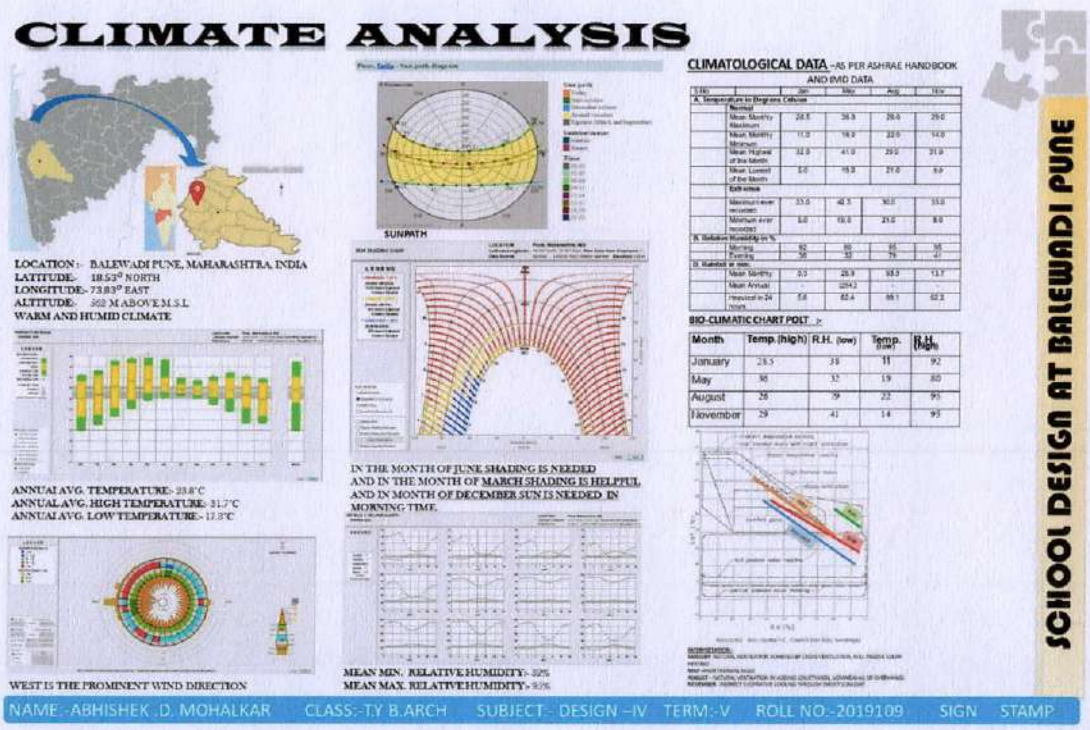


Month	January		May	
Time	10 AM	10 AM	10 AM	10AM
Altitude	33.21⁰	35.92⁰	53.57⁰	54.48⁰
Azimuth	135.50⁰	221.17⁰	89.62⁰	217.19⁰

SUN PATH DETAILS



Month	Temp.(high)	R.H. (low)	Temp. (low)	R.H. (high)
January	28.5	38	11	92
May	38	37	19	80
August	28	79	22	95
November	29	41	14	95

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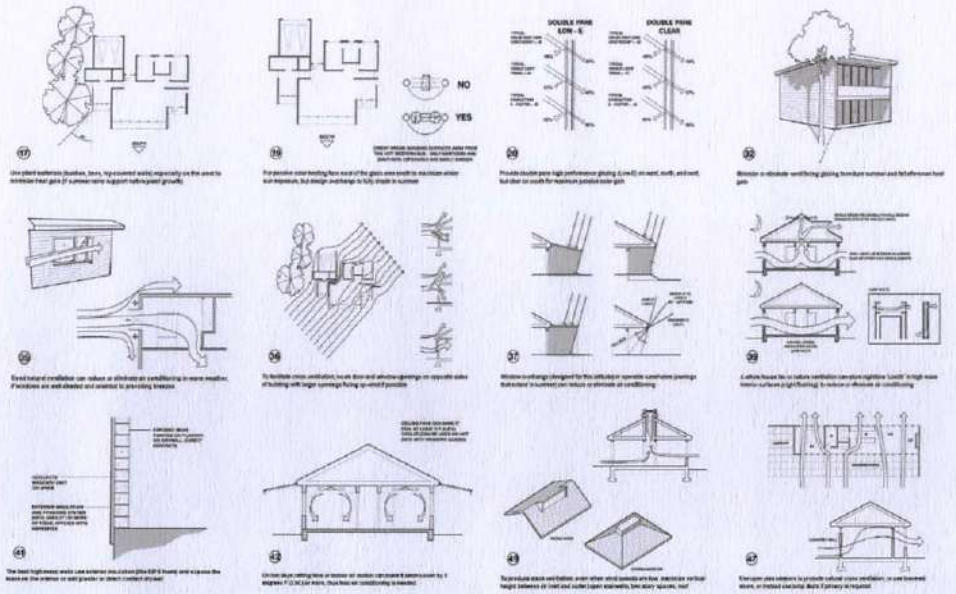
CLIMATE ANALYSIS- DESIGN STRATEGIES



SCHOOL DESIGN AT BALEWADI PUNE

NAME:-ABHISHEK .D. MOHALKAR CLASS:-T.Y B.ARCH SUBJECT:- DESIGN –IV TERM:- V ROLL NO:-2019109 SIGN STAMP

CONCEPT

CONCEPT OF SCHOOL DESIGN IS BROUGHT FROM THE NAVGHRAS HERE IN THIS PROPOSAL THE FUNCTION AND DEDICATION OF PERTICULAR USED AS THE ZONES AND SPACE REQUIRED FOR THE SCHOOL.

North East	East	South East
Mercury (Budha)	Venus (Shukra)	Moon (Chandra)
Jupiter (Guru)	Sun (Surya)	Mars (Kuja)
Ketu	Saturn (Sani)	Rahu

North | South

North West | West | South West

Planet	Color	Quality	Function	SPACES
Venus (Shukra)	White	Art	Drama	Amphitheater Art room, music room
Jupiter (Brihaspati)	Lemon yellow	knowledge	Library	library
Ascending Node (Rahu)	Iridescent	Restorer	Documentation	Admin office
Saturn(Shani)	Dark blue	knowledge	Museum	Computer lab,
Descending Node (Ketu)	Black	Anger	Museum	Science Lab
Mercury (Budh)	Golden yellow	Education	Lok kala Kendra	Classrooms
Moon (Chandra)	Milky white	Heart	Cafeteria	Canteen
Mars (Mangal)	Red	Power	Administration	Teachers room
Earth				Courtyard/ playground

KETU	BUDH	CHANDRA
SHANI	EARTH	MANGAL
RAHU	GURU	SHUKRA

GRAHAS

KETU Science Lab	BUDH Classrooms	CHANDRA Canteen
SHANI Computer lab	EARTH Playground	MANGAL Teachers room
RAHU Admin Block	GURU Library	SHUKRA Art room

SPACES WITH GHRAS

DIFFERENT ARRANGEMENTS OF SPACES ACCORDING TO USER COMPATIBILITY AND FUNCTION OF SPACES

SCHOOL DESIGN AT BALEWADI PUNE

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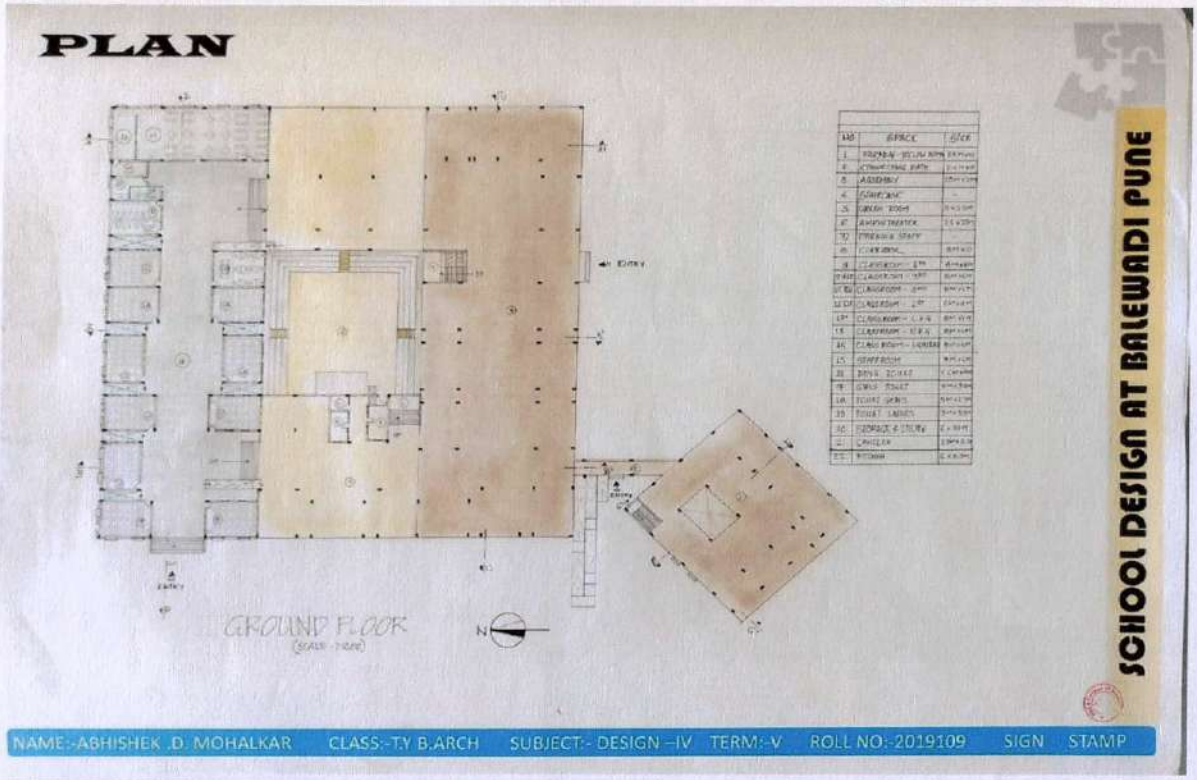
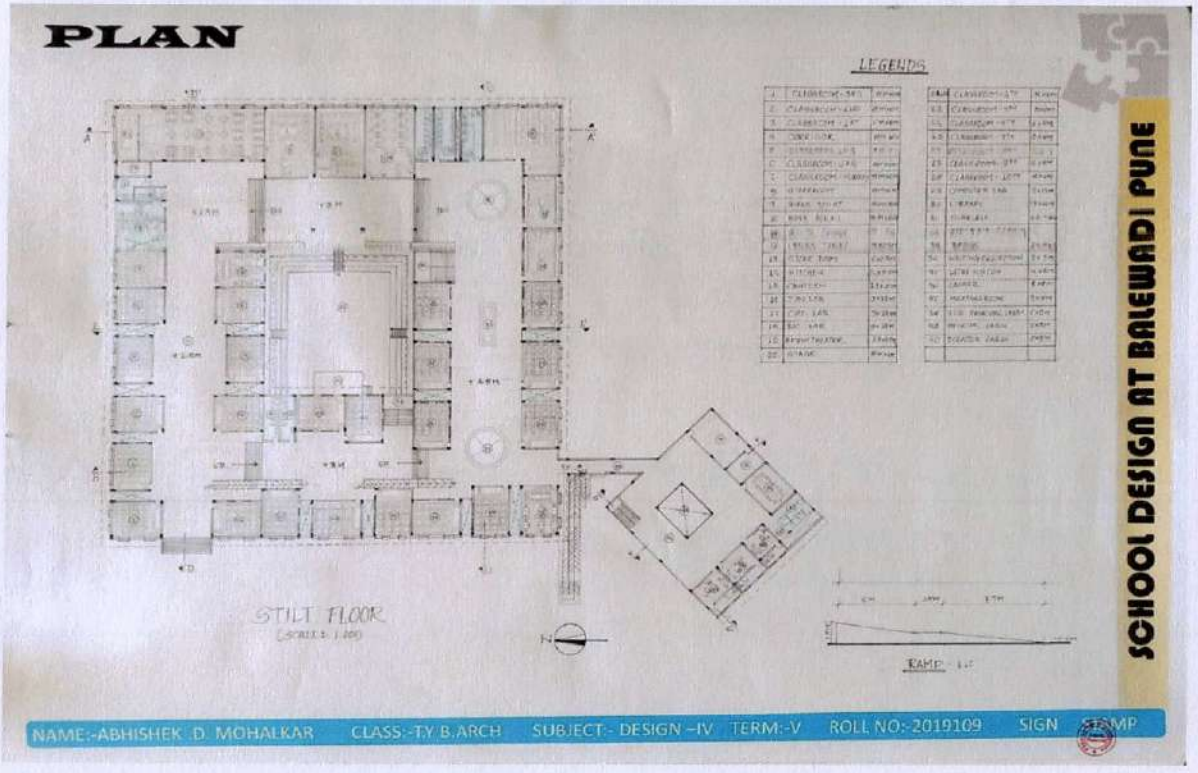
PLAN



PLAN



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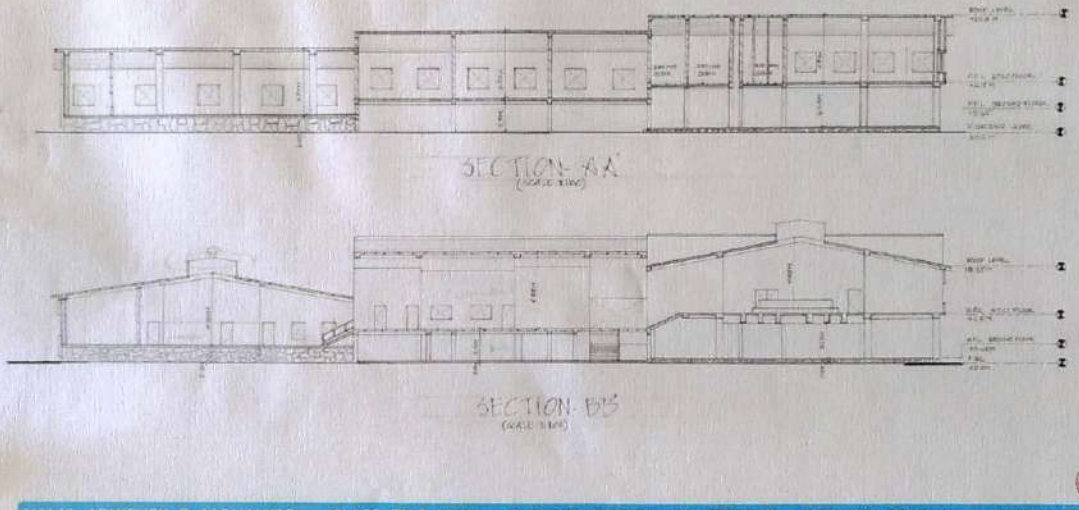
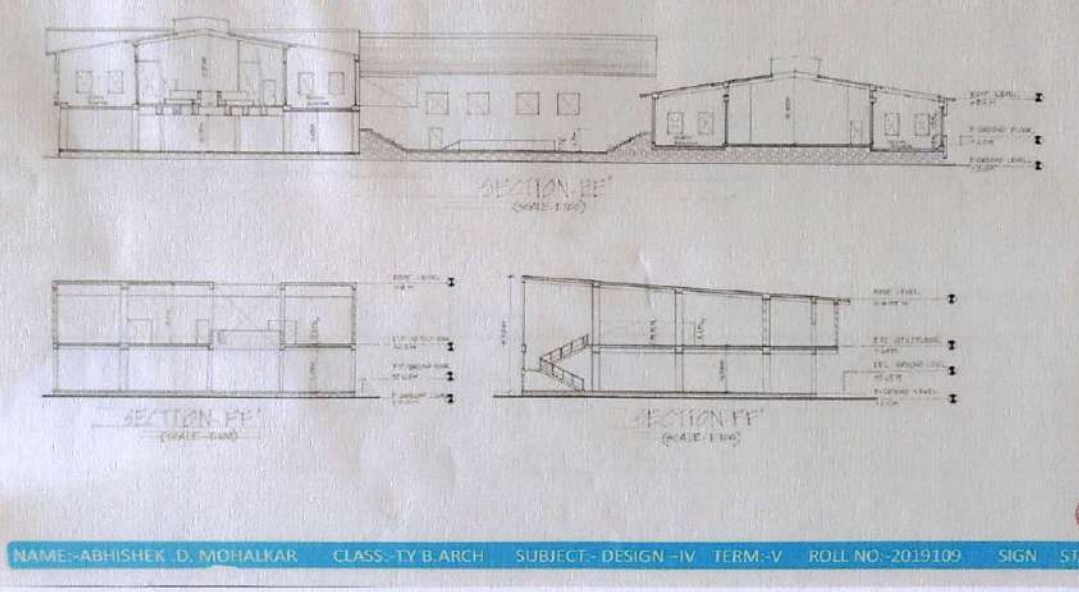
SECTIONS



SCHOOL DESIGN AT BALEWADI PUNE

NAME:- ABHISHEK .D. MOHALKAR CLASS:-TY B.ARCH SUBJECT:- DESIGN –IV TERM:-V ROLL NO.:-2019109 SIGN STAMP

SECTIONS



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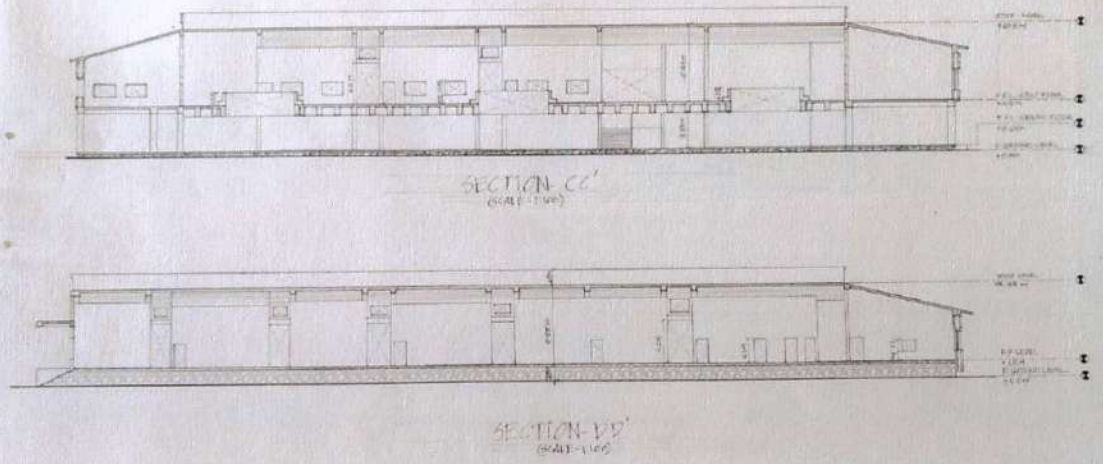

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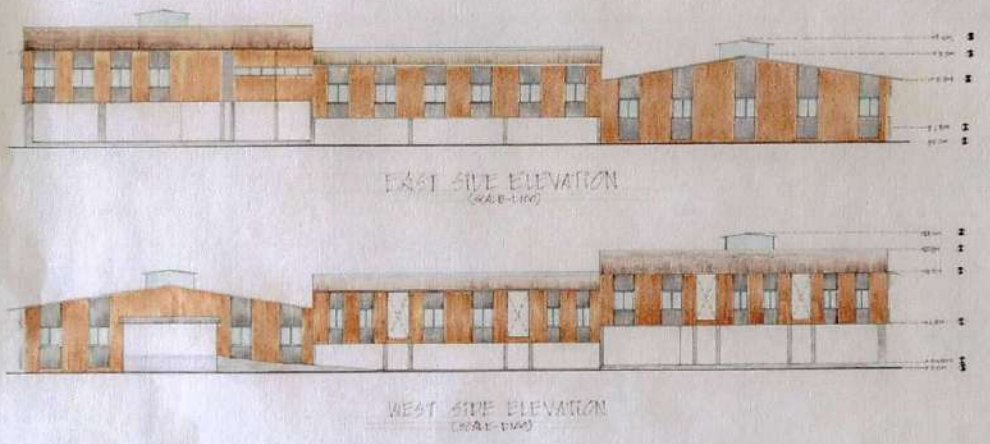
ELEVATIONS



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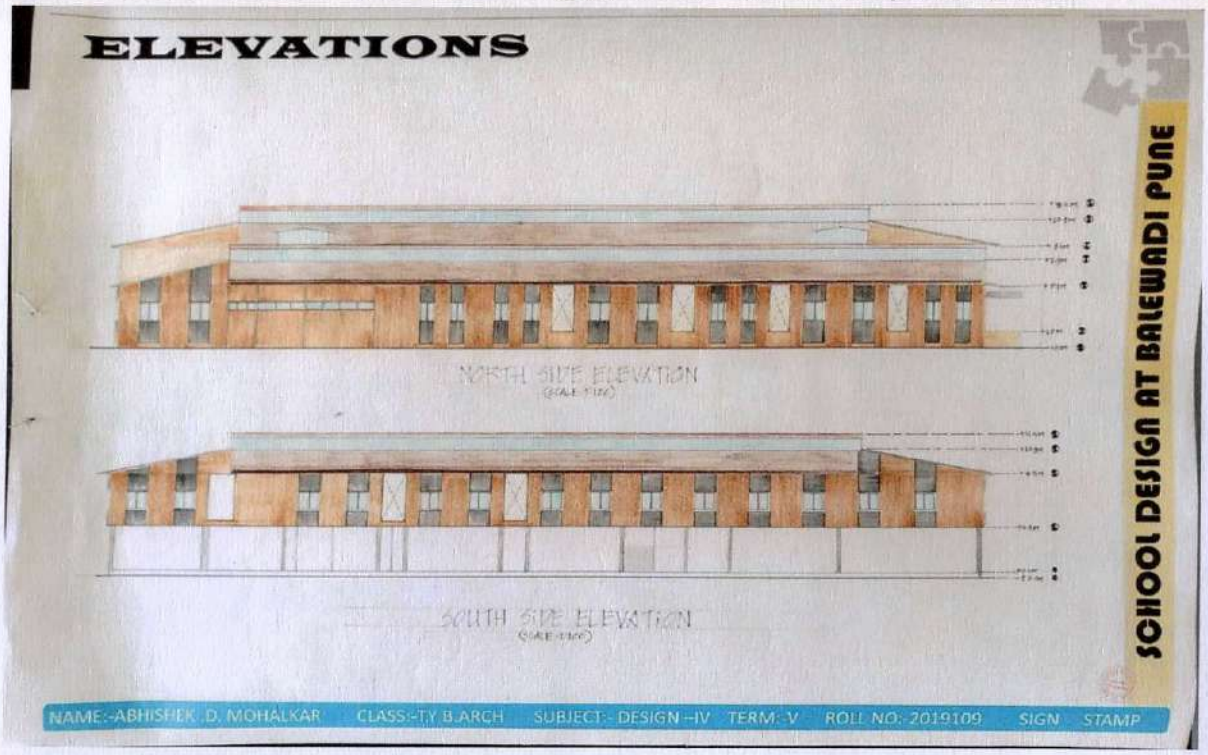
ELEVATIONS



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VIEWS

SCHOOL DESIGN AT BALEWADI PUNE

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TEACHERS COLONY PROPOSED AT RAVET

SESSION: 2022-2023 TERM I: June - November 2022 CLASS: IV Year B.Arch.

SUBJECT : Architecture Design
PROJECT : Teachers Colony Proposed at Ravet
STUDIO TEAM : Ar. Nishant Gawade, Ar. Pooja Kudale, Ar.Rakesh Mutha
DESIGN CHAIR : Prof. Prashant Gadre

1. Site Details

Site Area: 18,000 SQ.M Location: Ravet- Pradhikaran

Proposed Site Google Map

2. Rules & Regulations

SR. NO	AREA STATEMENT	AREA IN SQM
1	AREA OF PLOT (as per site)	18000
2	DEDUCTIONS IF ANY	-
3	AMENITY SPACE *(05% on total area of plot)*	900
4	NET PLOT AREA (1-3)	17100
5	RECREATIONAL OPEN SPACE *(10% on Gross Plot area)*	1800
6	BUILT UP AREA WITH RESPECT TO BASIC FSI AS PER FRONT ROAD WIDTH [1.10 X NET PLOT AREA (4)]	18810

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3. Marginal Distance
   Residential Building Marginal Distance
   a) Road Side Margin – 4.50 M
   b) Rear Side Margin – The marginal distance on all sides, except the front side of a building, shall be minimum H/5 (Where H = Height of the building above ground level). Provided that, such marginal distance shall be subject to a maximum of 12m. from the plot boundary and distance between two buildings shall be maximum 16 m.

   Row House Marginal Distance
   a) Front margin: 2.50 M b) Rear margin – 1.50m

4. Units Requirements (100-200 UNITS)

SR.NO	TYPE	CARPET AREA (SQ.M)	NO OF UNITS
1	1 BHK	30-45	40-50
2	2 BHK	60 - 75	60-80
4	3 BHK ROWHOUSE	120 - 140	20-25

Submission Requirements

Site analysis
- ☐ Concept Sheet
- ☐ Master Plan
- ☐ Building Floor plans/ individual unit plans/ Parking layout plans
- ☐ Site Sections/ Building Sections
- ☐ Elevations
- ☐ Furniture layout
- ☐ Building Services
- ☐ 3D Views/ Walkthroughs/ Physical Model
- ☐ Construction/Landscape details as required

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ARCHITECTURAL DESIGN-VI

TEACHERS HOUSING AT RAVET

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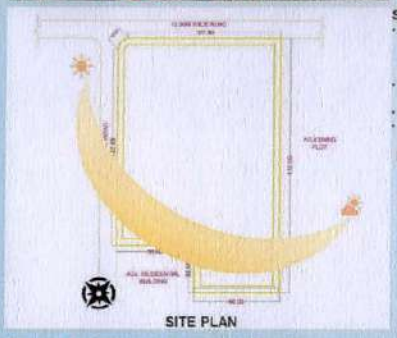
SITE ANALYSIS

LOCATION

SECTOR 32A, RAVET NEAR AKURDI RAILWAY STATION, RAVET PUNE, MAHARASHTRA



SITE PLAN

DISTANCES FROM PUBLIC TRANSPORT –
PRIMARY ROAD MAAN ROAD

- PUNE INTERNATIONAL AIRPORT 25 KM FROM SITE.
- AKURDI RAILWAY STATION 1.5 KM FROM SITE.
- NIGDI BUS STATION 2 KM FROM SITE

CO-ORDINATES

LONGITUDE - 73.51 E

LATITUDE –18.32 N

LANDMARK–

D Y PATIL COLLEGE AKURDI

RESIDENTIAL

PCCOE COLLEGE AKURDI

AKURDI RAILWAY STATION

SITE ADVANTAGES –

- WITH MAJOR INFRASTRUCTUFRE DEVELOPMENTS NEARING COMPLETION, RAVET IS ALL SET TO BECOME EVEN MORE WELL CONNECTED THAN BEFORE.
- BETTER WORK LIFE BALANCE AS THE HOMES ARE LOCATED CLOSE TO COLLEGES.
- WELL CONNECTED TO PUBLIC TRANSPORT
- EASY ACCESSIBILITY FROM ANY AREA OF THE CITY.

FLORA FAUNA

PURPLE LORIKEEN

INDIAN TOAD

SQUIRREL

MANGO

NEEM

BAMBOO

CLIMATE AND RAINFALL-
TYPE- WARM AND HUMID

TEMPERATURE- MAXIMUM 40 C
MINIMUM 8 C

HUMIDITY- HIGHEST 85% (JANUARY)
LOWEST 48% (SEPT.)

RAINFALL- MAXIMUM 508.5MM
WIND DIRECTION-
SOUTH WEST TO NORTH EAST

S

STRENGTH –

- SITE LOCATION IS ITS BIGGEST STRENGTH. SITE IS CLOSE BY TO MANY EDUCATIONAL INSTITUTES.
- ALL THE NECESSARY UTILITIES ARE AVAILABLE ON SITE LIKE WATER, ELECTRICITY AND SANITATION FACILITIES.
- BUS AND PRIVATE TRANSPOET IS AVAILABLE AND SITE IS WELL CONNECTED WITH THE MAJOR BUSINESS CENTERS
- AKURDI RAILWAY STATION IS 1.25KM FROM SITE.
- PRADHIKARAN BUS DEPOT IS PLACED AT 1.25KM NEAR THE RAILWAY STATION.

W

WEAKNESS -

- THERE IS NO BUS STOP NEARBY ON WALKABLE DISTANCE
- VEGITABLE MARKET IS NOT AVAILABLE NEARBY

O

OPPORTUNITIES -

- AS MANY EDGUCATIONAL INSTITUTES ARE NEARBY, LARGE NUMBER OF TEACHING PROFESSIONAL CAN OPT FOR THE PROJECT.
- NEAR BY AREA IS WELL POPULATED AND COMMECIAL DEVELOPMNET CAN BE PROFITABLE IF PLANNED FOR.

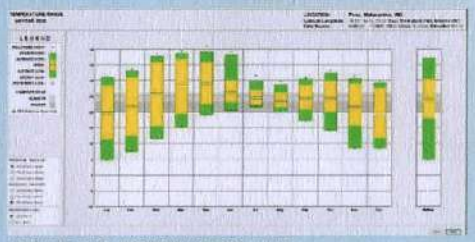
T

THREATS -

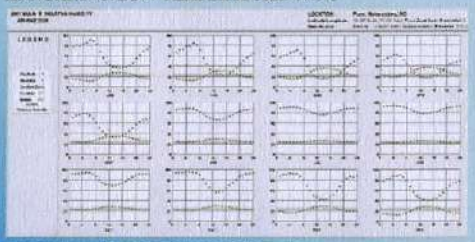
- AIR AND NOISE POLLUTION DUE TO HEAVY TRAFFIC.
- SITE CLOSE TO RIVER HAS AN INHERENT FLOOD RISK MAKING DEVELOPMENT APPROPRIATE.
- INCREASING COMPETITION IN BETWEEN HIGH RISE RESIDENTIAL COMPLEX IN THAT AREA .

TEACHERS HOUSING AT RAVET

CLIMATE ANALYSIS



ANNUAL AVG. TEMPERATURE:- 23.8°C
ANNUAL AVG. HIGH TEMPERATURE:- 31.7°C
ANNUAL AVG. LOW TEMPERATURE:- 17.8°C



MEAN MIN. RELATIVE HUMIDITY:- 32%
MEAN MAX. RELATIVE HUMIDITY:- 95%

CLIMATOLOGICAL DATA -AS PER ASHRAE HANDBOOK AND IMD DATA

S No		Jan	May	Aug	Nov
A. Temperature in Degrees Celsius					
	Normal				
	Mean Monthly Maximum	28.5	36.0	26.0	29.0
	Mean Monthly Minimum	11.0	19.0	22.0	14.0
	Mean Highest of the Month	32.0	41.0	29.0	31.0
	Mean Lowest of the Month	5.0	19.0	21.0	8.0
	Extremes				
	Maximum ever recorded	33.0	42.5	30.0	33.0
	Minimum ever recorded	5.0	19.0	21.0	8.0
B. Relative Humidity in %					
	Morning	92	80	95	95
	Evening	38	32	79	41
D. Rainfall in mm.					
	Mean Monthly	0.3	25.9	93.3	13.7
	Mean Annual	-	1234.2	-	-
	Heaviest in 24 hours	5.6	62.4	99.1	62.2

Month	Temp.(high)	R.H. (low)	Temp. (low)	R.H. (high)
January	28.5	38	11	92
May	36	32	19	80
August	26	79	22	95
November	29	41	14	95

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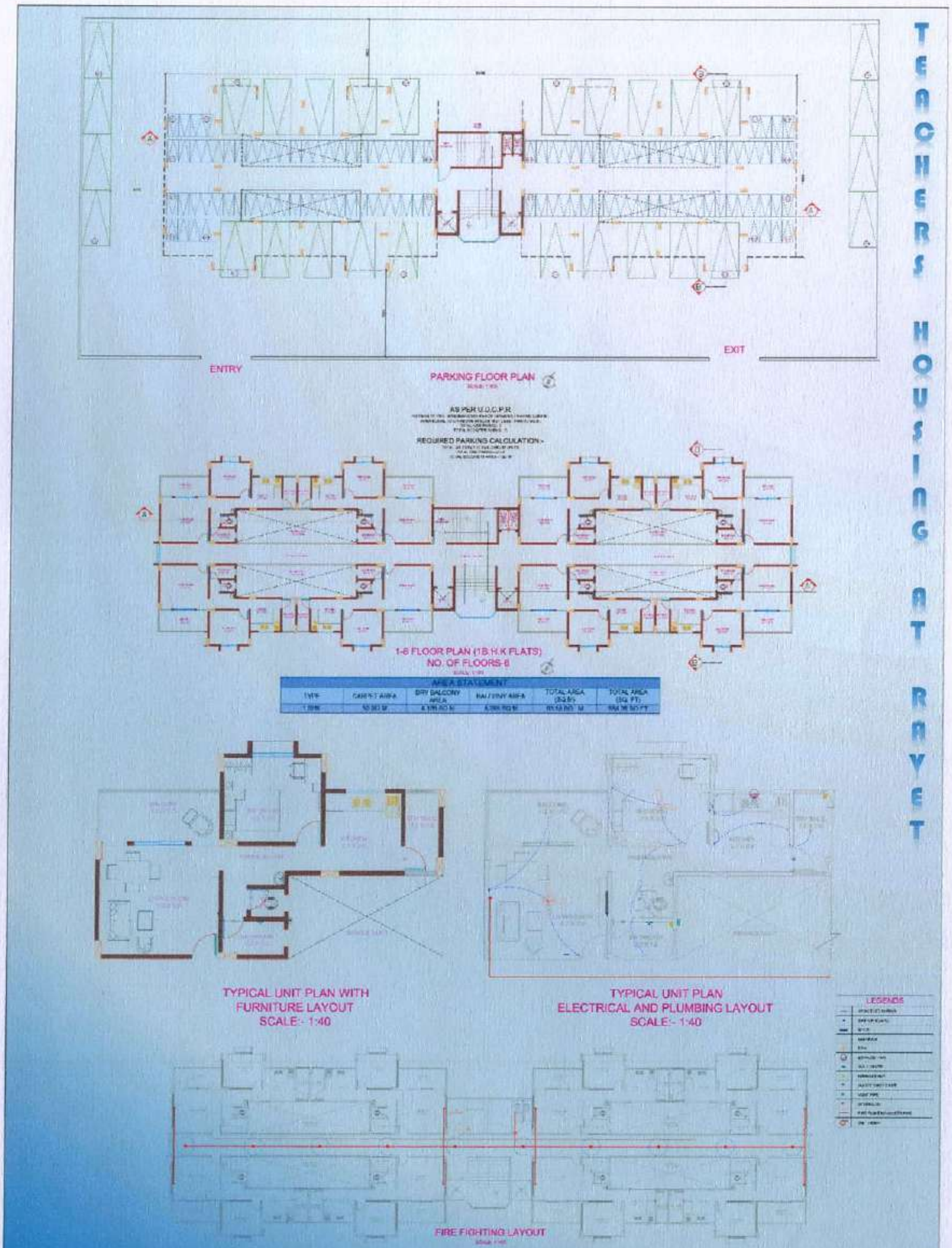

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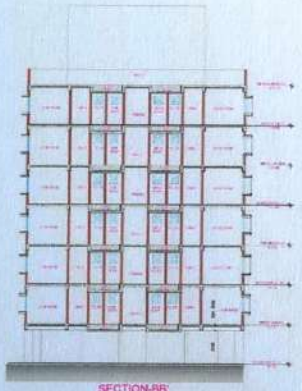
TEACHERS HOUSING AT RAVET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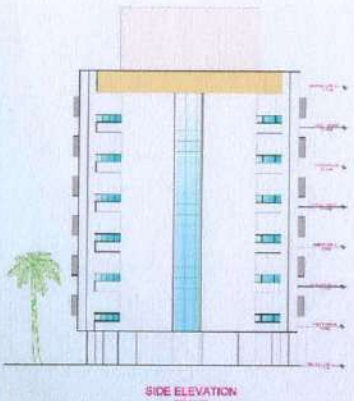
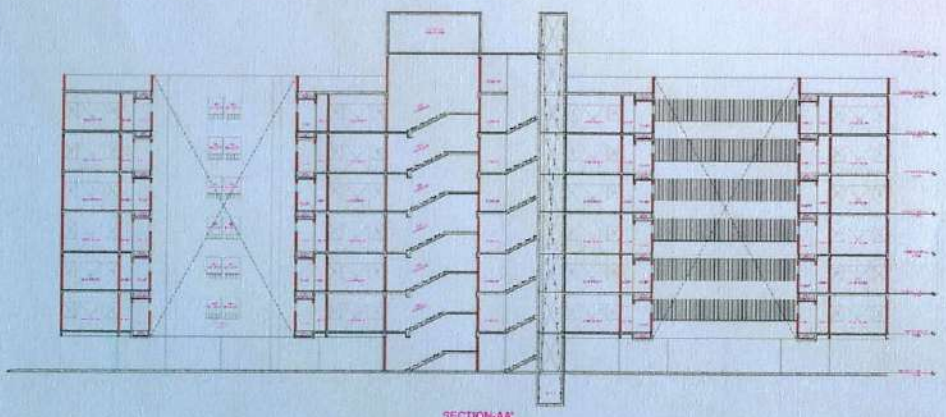

SIDE ELEVATION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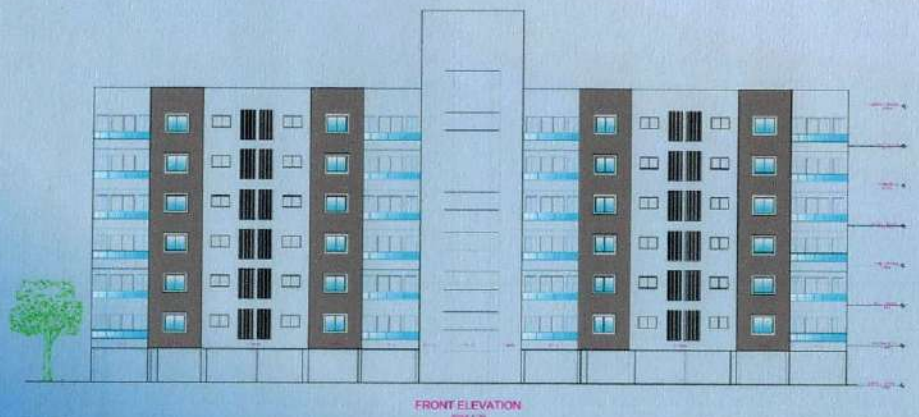
FRONT ELEVATION

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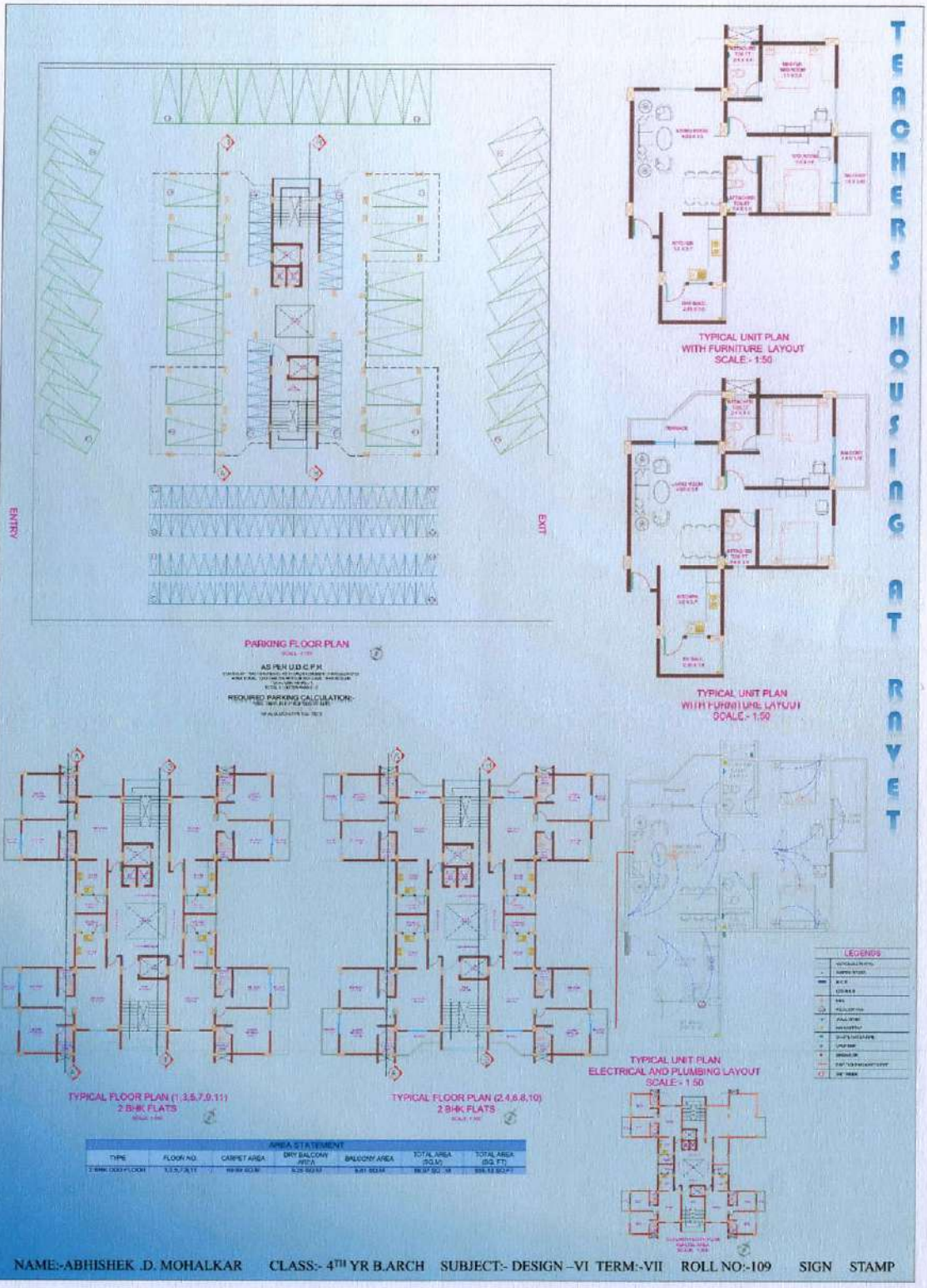

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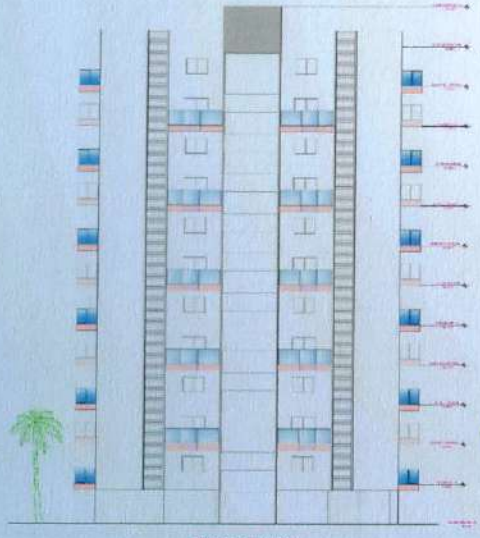

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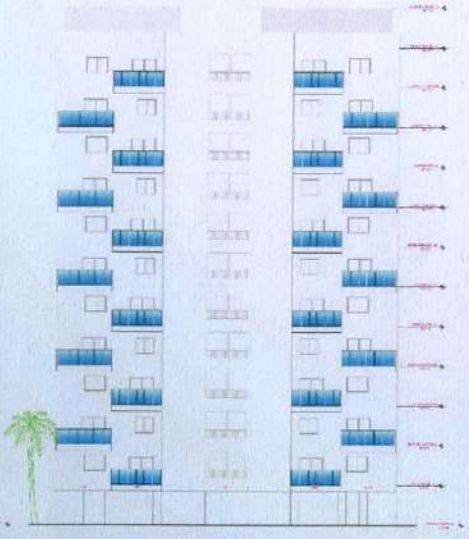

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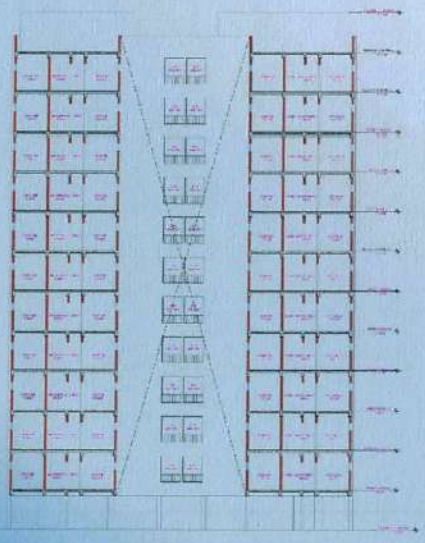
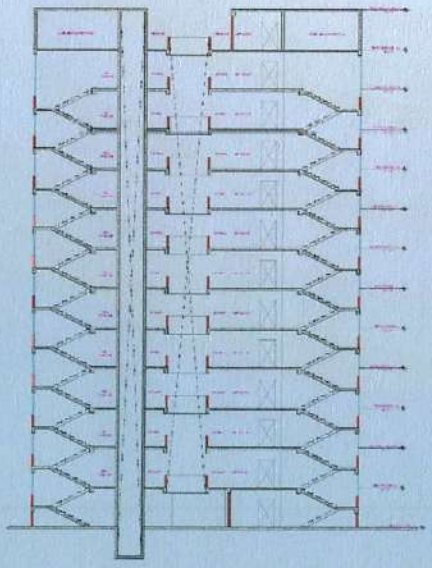


SECTION-AA'



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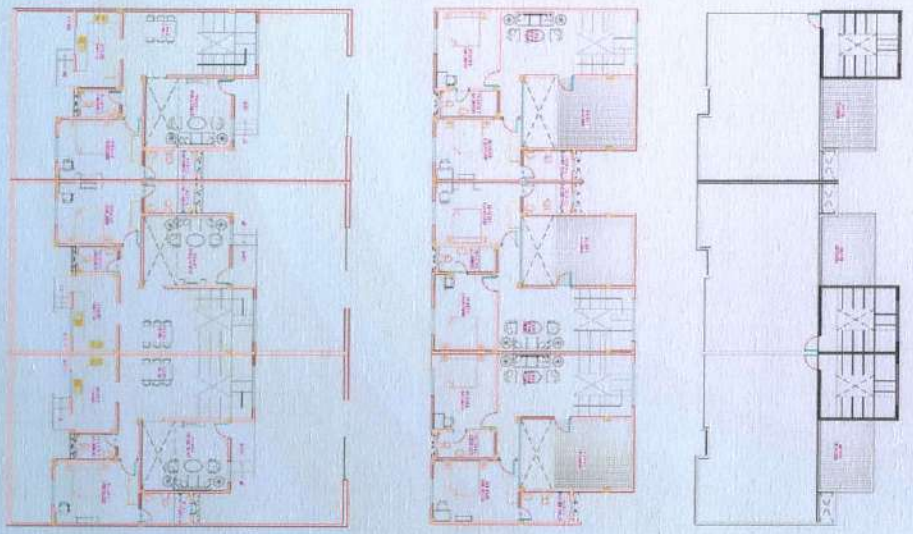
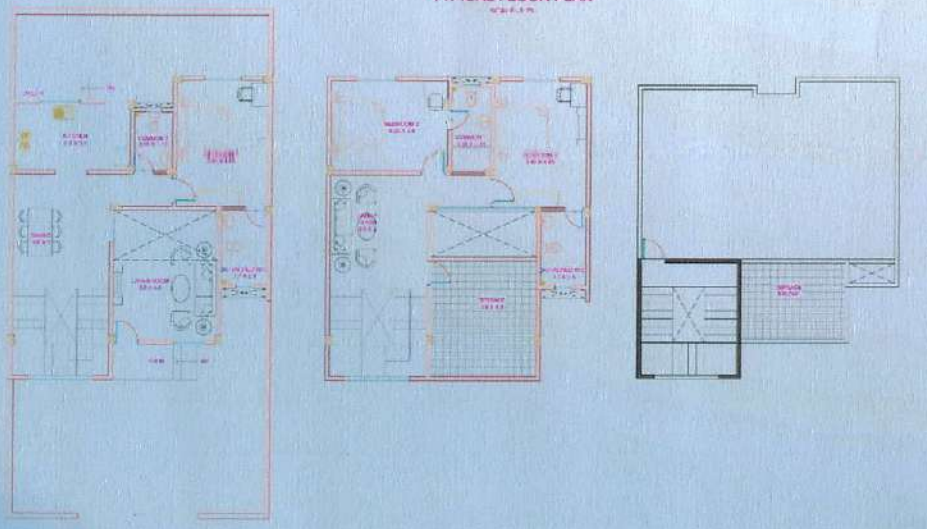


TYPICAL FLOOR PLAN



GROUND FLOOR PLAN FIRST FLOOR PLAN TERRACE FLOOR PLAN

KEY PLAN

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Landscape Design

Landscape design is the art and science of creating outdoor spaces that are aesthetically pleasing, functional, and sustainable. It involves the arrangement and organization of various elements such as plants, trees, shrubs, hardscapes (e.g., pathways, patios), water features, lighting, and other decorative elements to create a harmonious and enjoyable environment.

Students outcome or Learnings:

Students learn

- The concept of Landcscape Design
- Scope of Landscape
- Elements of Landscape
- Hardscape
- Softscape herbarium
- Garden styles
- Works of Lanscape Architects
- After studying all of the above students design the landscape of school.

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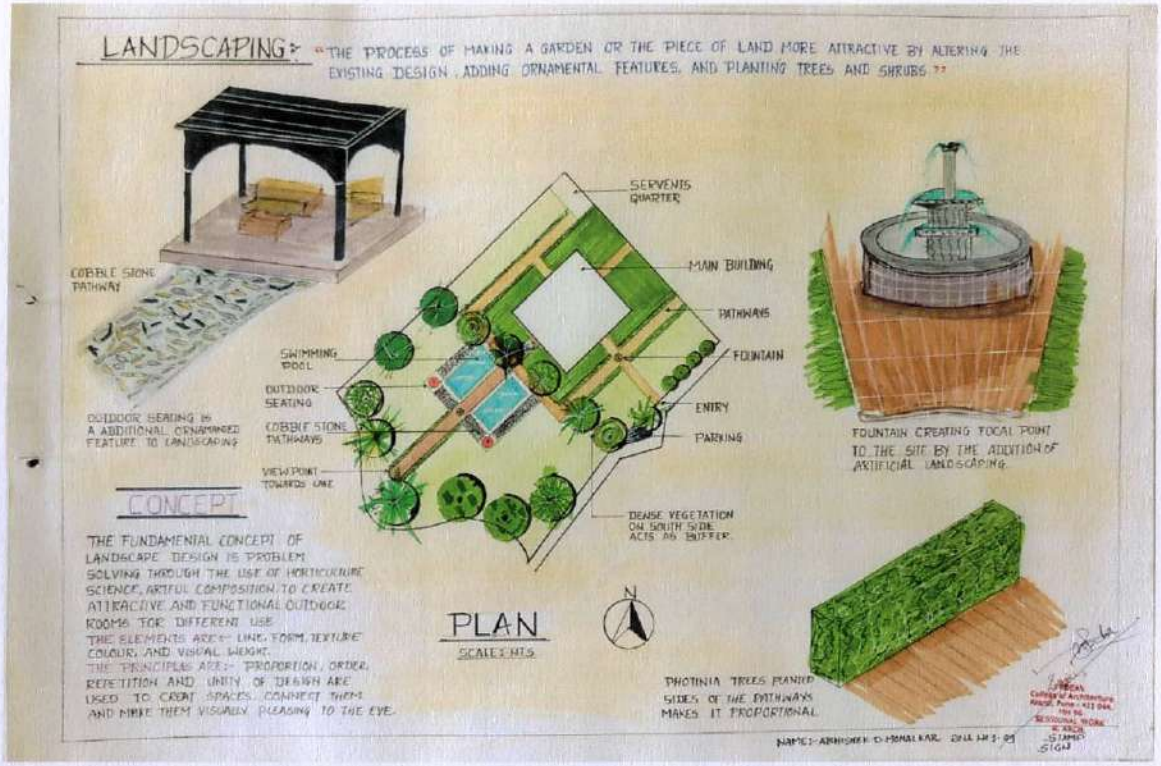

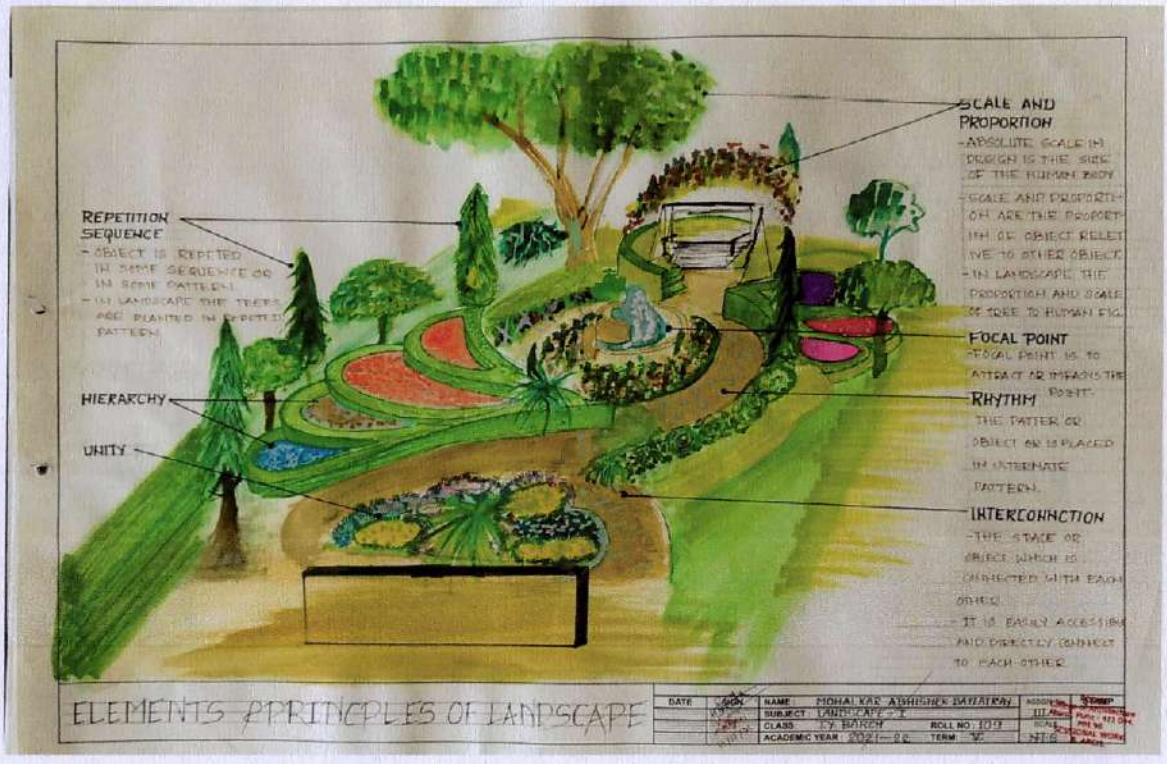

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LIGHTING

- LANDSCAPE LIGHTING HAS EXCESSIVE POTENTIAL TO ENHANCE THE LANDSCAPE AND PROVIDES MANY BENEFITS FOR RESIDENTIAL AND COMMERCIAL APPLICATIONS.
- LANDSCAPE LIGHTING CAN ADD SAFETY, SECURITY, AMBIENCE, MOOD AND DRAMA TO THE OUTDOOR ENVIRONMENT.

•SAFETY:-
ONE OF THE PRIMARY FUNCTIONS OF EXTERIOR LIGHTING IS TO ENSURE SAFE PASSAGE FOR PEDESTRIANS ON STEPS, SIDEWALKS, WALKWAYS OR OTHER AREAS WHERE ASPECTS OF THE OUTDOOR ENVIRONMENT MAY BECOME HAZARD. AT NIGHT, GARTH LIGHTINGS TYPICALLY PROJECTS DOWNWARD AND NEVER INTO ONES EYES AND IS FREE FROM GLARE.

•SECURITY:-
LOW LEVELS OF LIGHT EVENLY SPREAD AROUND THE PERIMETER OF BUILDINGS CAN ACT AS A PREVENTIVE TO INTRUDERS AND PROVIDE GREATER SECURITY THAN FLOODS WHICH CREATES POOL OF LIGHTING ALONG WITH DARK SHADOWS WHERE SOMEONE CAN HIDE. LIGHT SOURCES THAT EMITS LOW LEVEL LIGHT FROM THE KNEE DOWN SILHOUETTE PROWLERS AND MAKE THEM VISIBLE.

•AMBIANCE AND DRAMA:-
BEAUTY, HOSPITALITY AND DRAMA ARE ENHANCED BY THE PROPER SELECTION AND PLACEMENT OF LANDSCAPE LIGHT. CHOOSING FOCAL POINTS OF ARCHITECTURE, ART, UNIQUE FEATURES AND LANDSCAPE PLANT MATERIAL CAN ADD NIGHT TIME DRAMA TO THE LANDSCAPE AFTER THE SUN HAS SET.

LIGHTING TECHNIQUES :-

1)PATH LIGHTING:-
- THIS TECHNIQUE IS USED PRIMARILY FOR SAFETY TO HIGH LIGHT SIDEWALKS, DRIVES, OR ANY PATH TO ENSURE SAFE PEDESTRIAN PASSAGE AT NIGHT.
- CHOOSE PATHWAY LIGHTS OFFERING DOWNLIGHTING WITH EXPOSED PLACED ON FIXTURES THAT INCORPORATE DIFFUSED OR SHIELDED LAMPS.
- TYPICAL FIXTURES: MUSHROOM, TULIP LIGHTS, LANTERN, SPECIALTY LIGHTS.

2)STEP OR DECK LIGHTING:-
- STEP LIGHTING BRINGS DECK LIFE IN NIGHT AND HELPS US TO NEGOTIATE STAIRS SAFELY DURING NIGHT.
- IT'S FIXTURE CAN BE INSTALLED BENEATH BENCHES AS RECESSED LIGHT IN THE RISERS OF STEPS AND AS A SURFACE LIGHTS ON VERTICAL POST.
- TYPICAL FIXTURES:- SPOTLIGHT, LIGHT, SPECIALITY LIGHTS.

3)UNDERWATER LIGHTING:-
- UNDER WATER LIGHTING HIGHLIGHTS UNDERWATER PLANT MATERIAL & CAPTURES LIGHT TO SHOW OFF DEPTH OR IMAGINATIVE DESIGN.
- ILLUMINATING WATER BODIES NOT ONLY INCREASE THEIR ATTRACTIVENESS BUT ALSO ENSURES SAFETY IN DARK.
- CASCADING FOUNTAINS AND FALLS REFLECT LIGHT IN THEIR MOVEMENT ADDING A VISUAL PERSPECTIVE TO THE SOUND OF RIPPLING WATER.

4) UP LIGHTING :-
- UP LIGHTING MEANS TO LIGHT SOMETHING FROM BELOW.
- UPLIGHTING IS RARELY SEEN IN NATURE YET THIS EFFECT IS TYPICALLY USED TO HIGHLIGHT THE TREES, STATUES, ETC.
- AND TO PRODUCE LARGE SHADOWS AND DRAMATIC FACADES OR TO "WASH" WALL WITH LIGHTS.

5) DOWN LIGHTING:-
- MIRRORING THE EFFECT OF THE SUN OR THE MOON, DOWNLIGHTING IS THE MOST NATURAL FORM OF LANDSCAPE LIGHTING.
- CHOOSE FIXTURES THAT CAN EASILY BE MOUNTED ON EAVES AND WALLS OR SUSPENDED FROM TREES AND OTHER ELEVATED STRUCTURES.

ELEMENTS OF HARDSCAPE

DATE	SIGN	NAME	ABHISHEK D. MOHALKAR
		SUBJECT	LANDSCAPE
		CLASS	THIRD YEAR ROLL NO. 1071
		ACADEMIC YEAR	2019-20 TERM V

LINKAGES

" LINKAGES OR A CIRCULATION SYSTEMS ARE A COMBINATION OF LINEAR CONNECTORS (CIRCULATION PATHS, TRAFFIC GENERATORS) AND EVENTS ALONG THE CONNECTORS LIKE ENTRANCES, BRIDGES, STEPS AND GATEWAYS. "

1) BRIDGES :-
- ANY ACCESS FROM SITE PLACE TO ANOTHER NEEDS TO AVOID UNNECESSARY OR DISTURBING ELEMENT AND TO PROVIDE AESTHETIC VALUE TO LANDSCAPE DESIGN SHOULD BE EASY TO USE & SAFE TO BUILD.
- LOCATED AT SUITABLE AREAS WITHOUT CAUSING DAMAGE DESIGN SHOULD CONSIDER SAFETY AND COMFORT AT PRIME FACTORS.
- MATERIAL SHOULD BE DURABLE, WEATHERPROOF AND VANDAL PROOF MATERIAL.

2)RAMPS :-
- AN INCLINED PLANE, ALSO KNOWN AS RAMP, IS A FLAT SUPPORTING SURFACES TILTED AT AN ANGLE, WITH ONE END HIGHER THAN THE OTHER, USED AS AN AID FOR RAISING OR LOWERING A LOAD.
- THE INCLINED PLANE IS ONE OF THE SIX CLASSICAL SIMPLE MACHINES DEFINED BY RENAISSANCE SCIENTISTS.
- PEDESTRIAN PATHS AND SIDEWALKS HAVE GENTLE RAMPS TO LIMIT THEIR SLOPE, TO ENSURE THAT PEDESTRIANS CAN KEEP TRACTION.

3) STEPS :-
- LINK AREAS OF DIFFERENT LEVELS AND INDICATE ACCESS.
- NORMALLY USE UNIFORM STEPS AND AVOID ANY DESIGN THAT CAN CAUSE TIREDNESS OR DISCOMFORT WITH WELL THOUGHT SAFETY PRECAUTIONS.
- LANDING SHOULD BE PROVIDED FOR HIGHER STAIR CASES.

ELEMENTS OF HARDSCAPE

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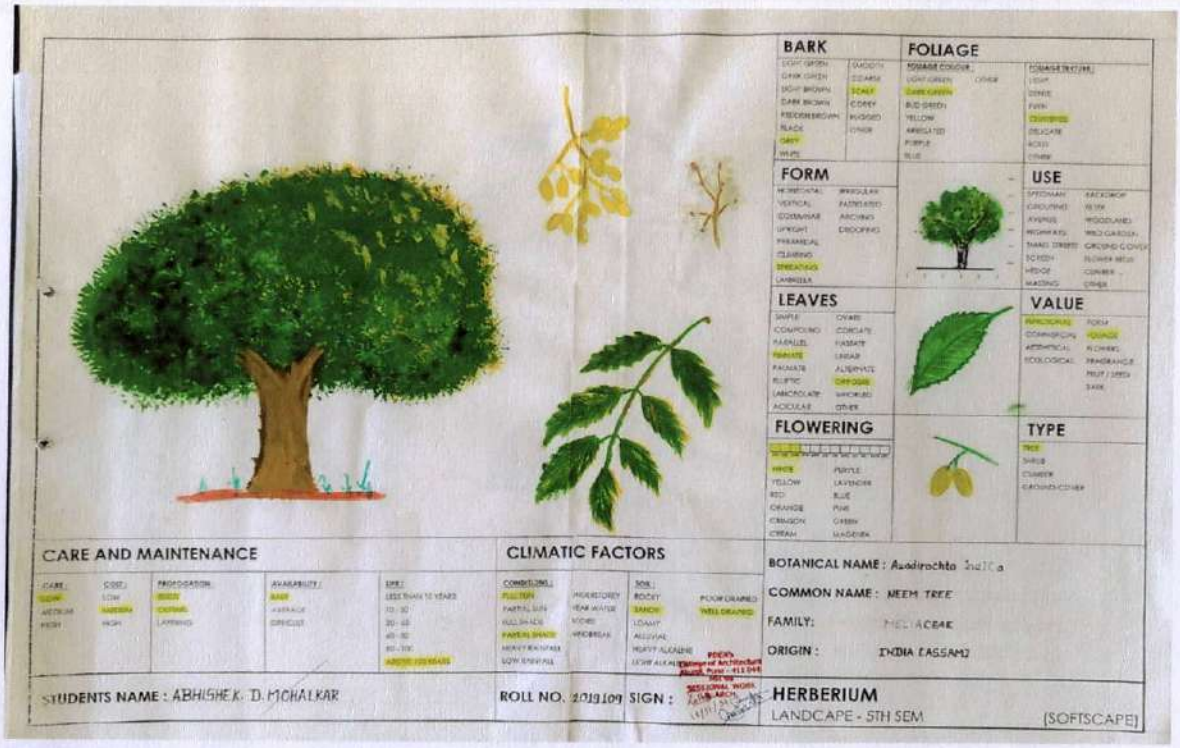

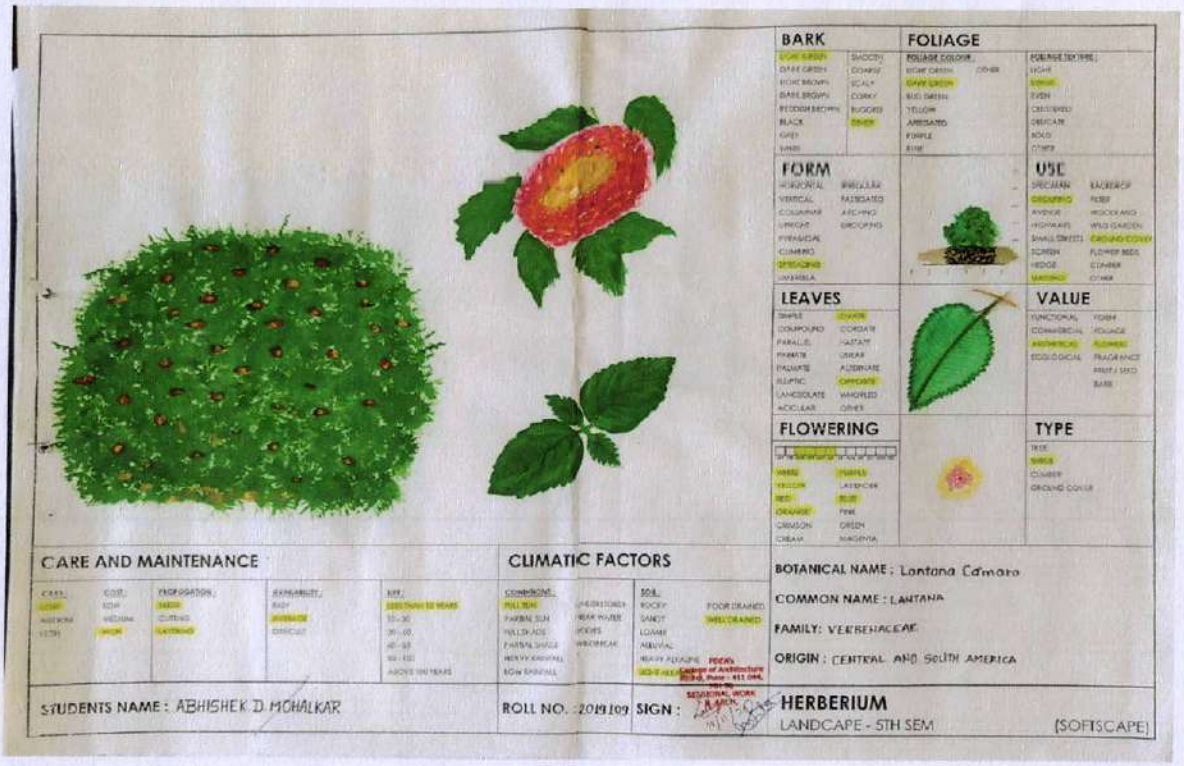

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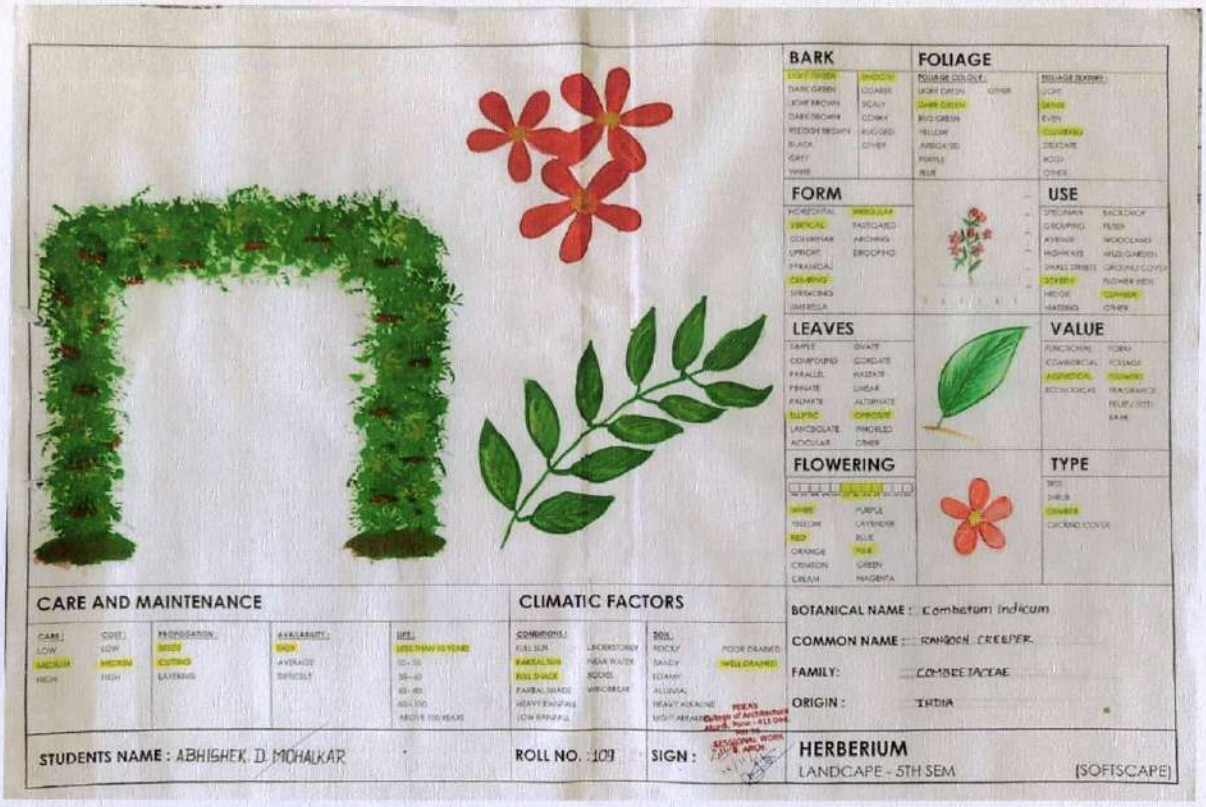

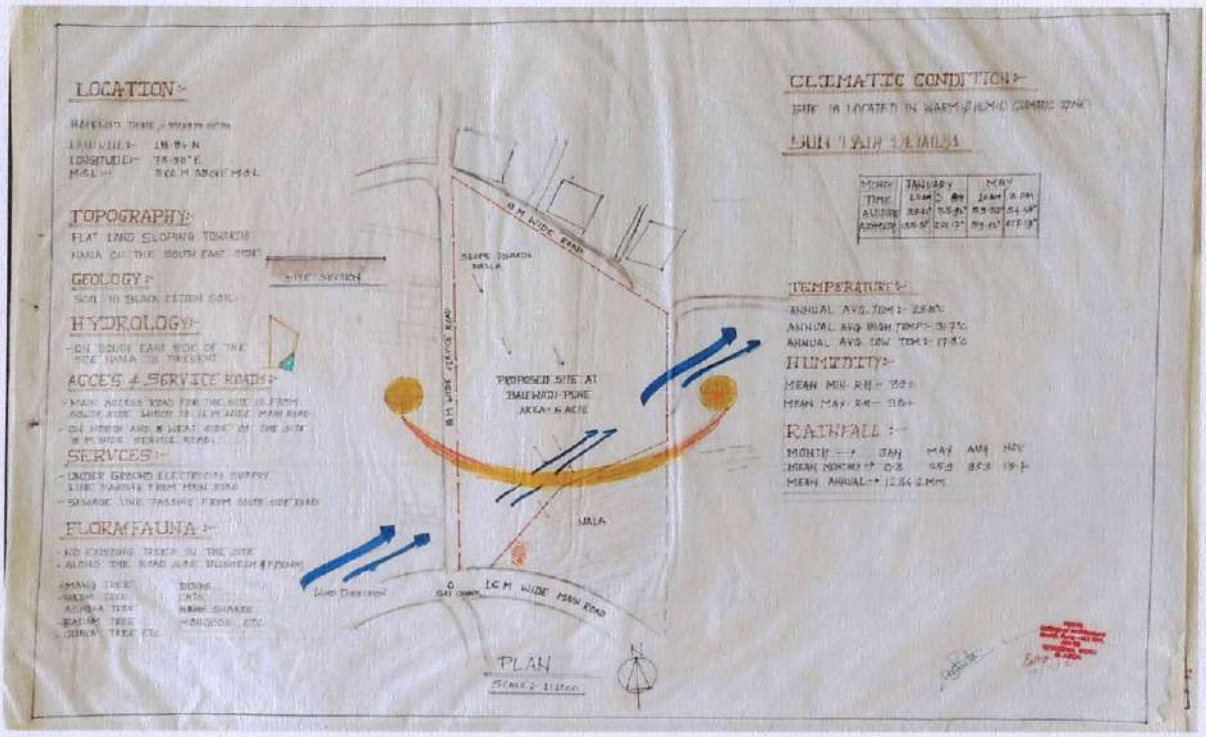

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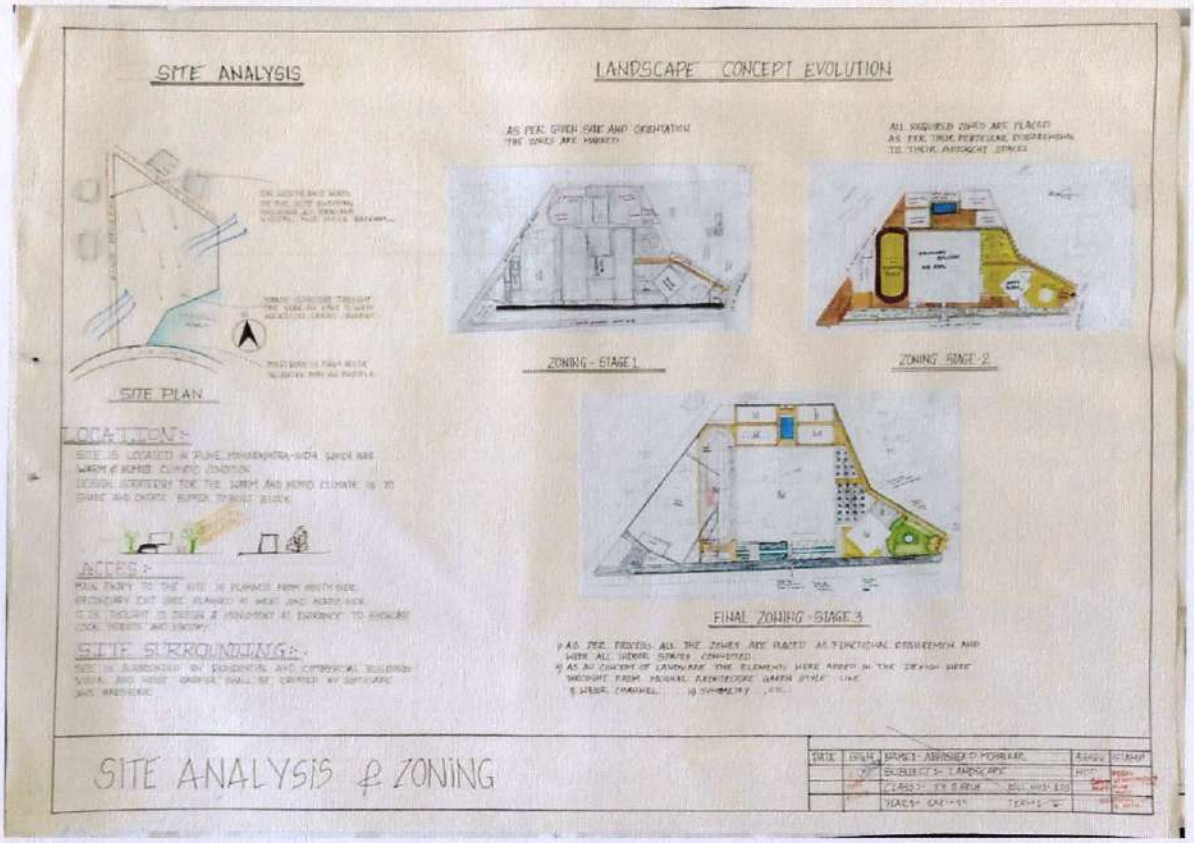

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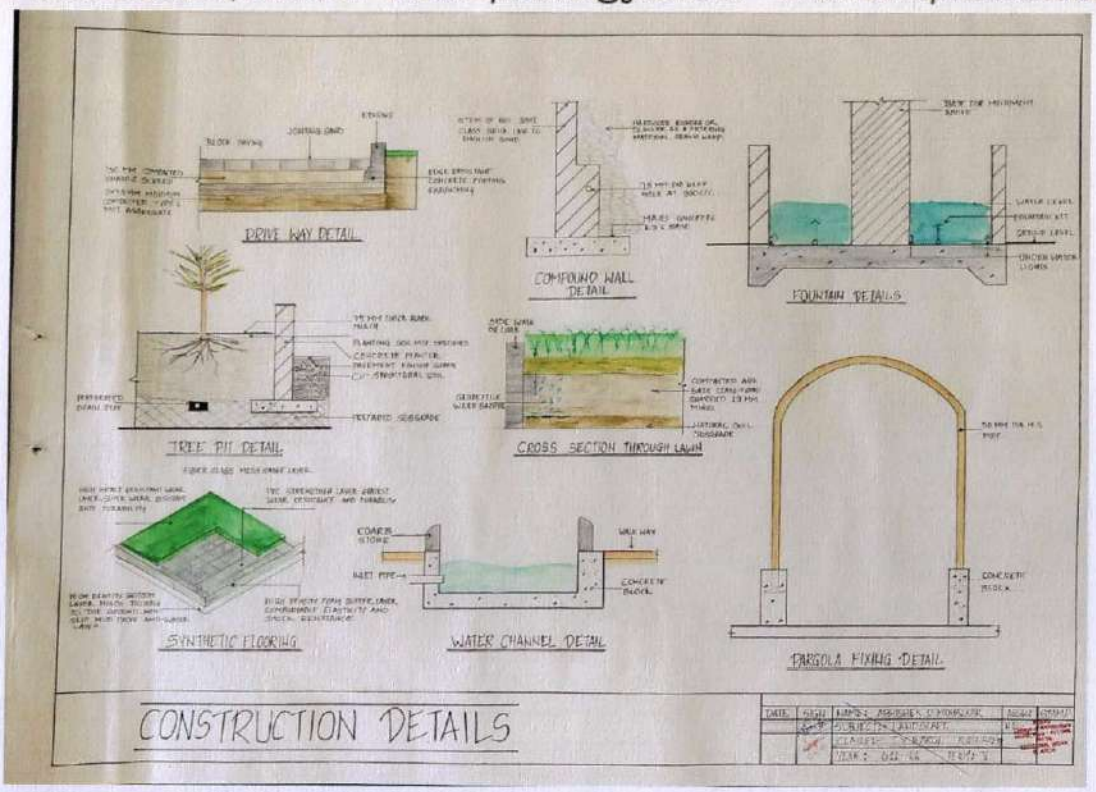

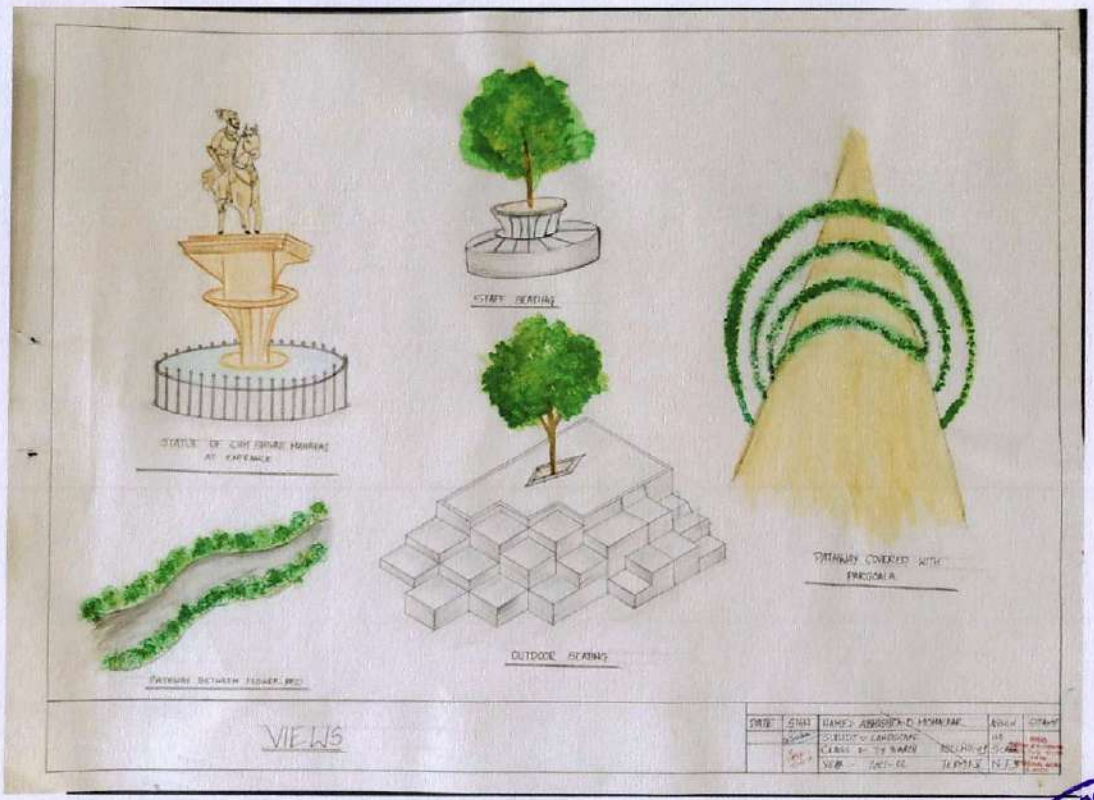

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Building Construction and Technology

Students outcome or Learnings:

Students learn the various basic technical skills such as

- It covers types of building componants, bricks and Brick bonds brick masonary & Juctions,brick piers.
- Students also learnt stone masoary
- Various types of Arches
- Wooden joist floors
- Timber Door frames
- Various types footings
- Staircase details (wooden & RCC)
- Slab details (one way & two way)
- Partions & Joinary details
- Door window details
- Rolling shutter
- Suspended ceiling details
- Furniture details
- Steel trusses
- Steel Structures

Other various small details which is used in Building Technology.

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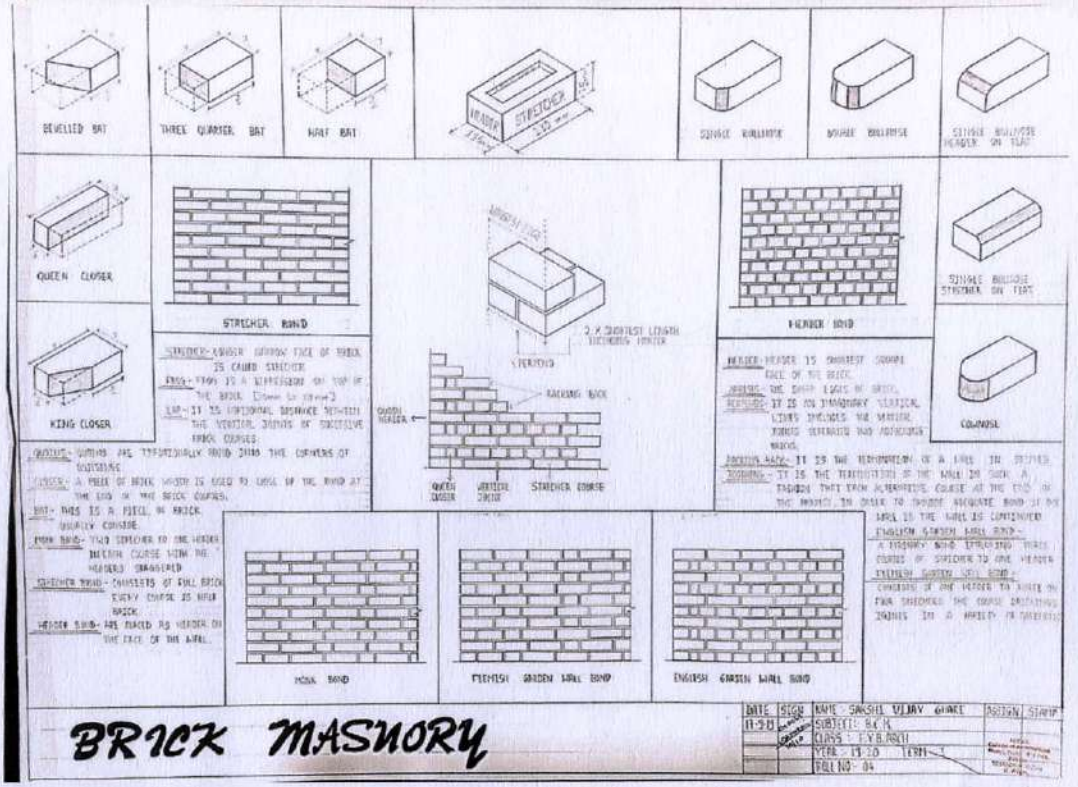

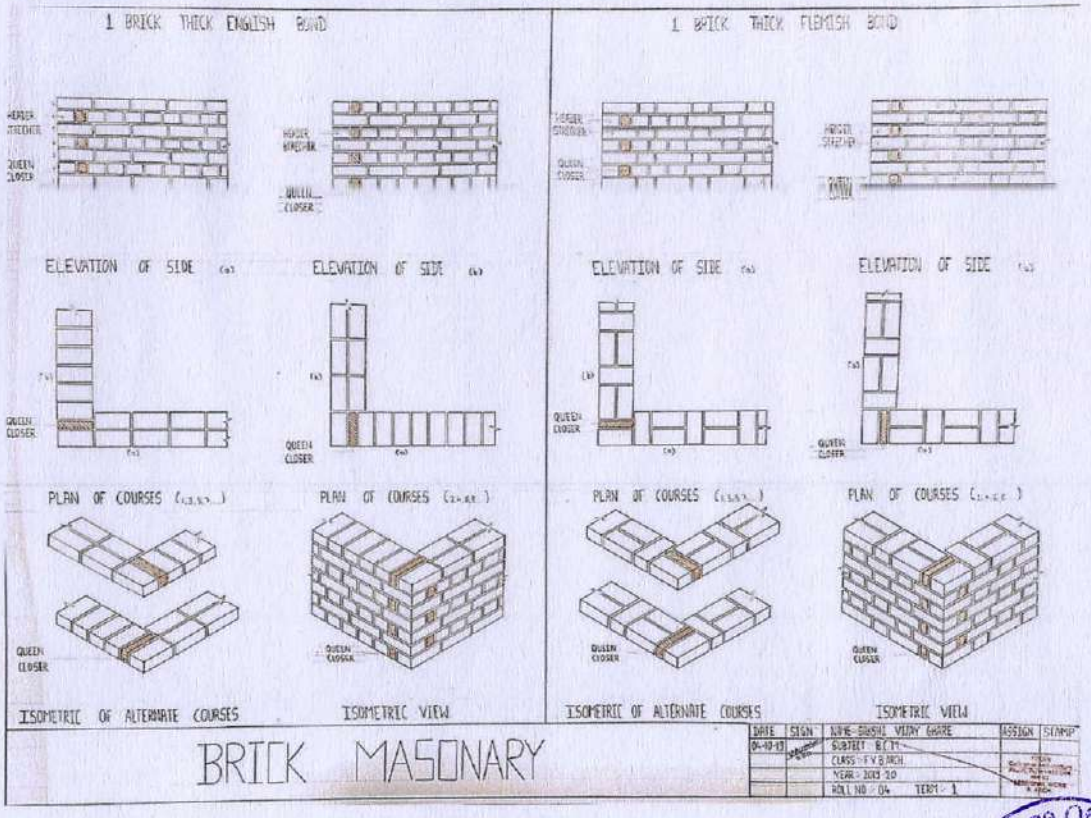

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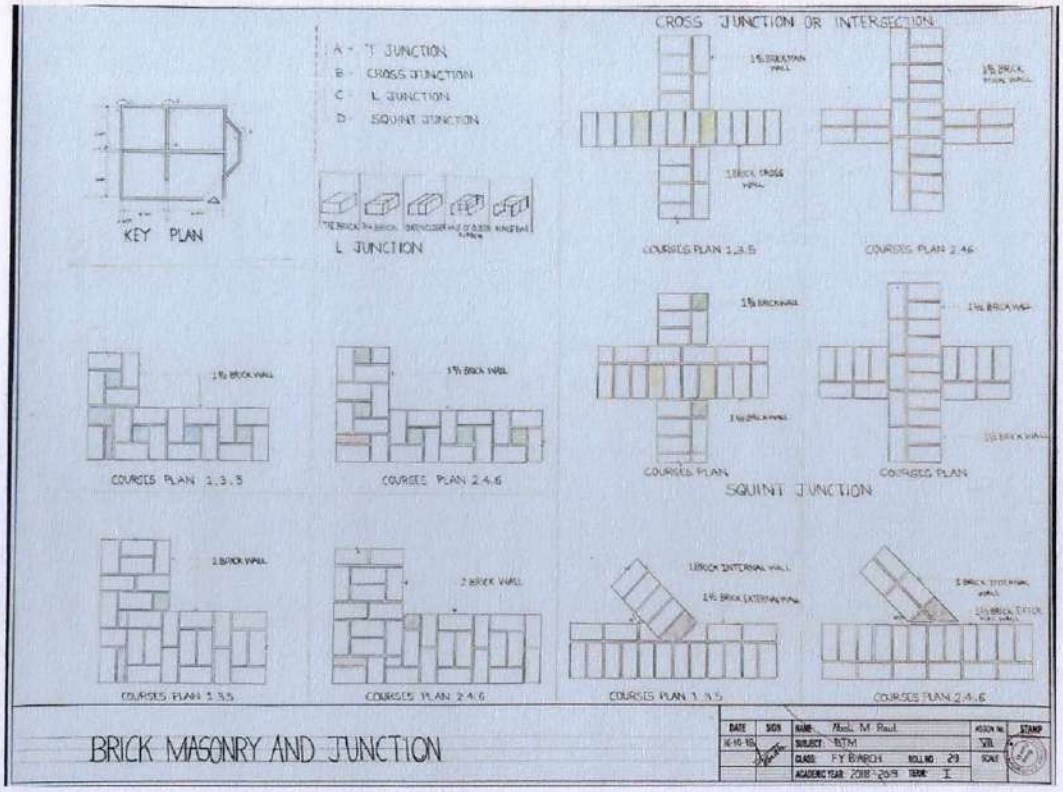

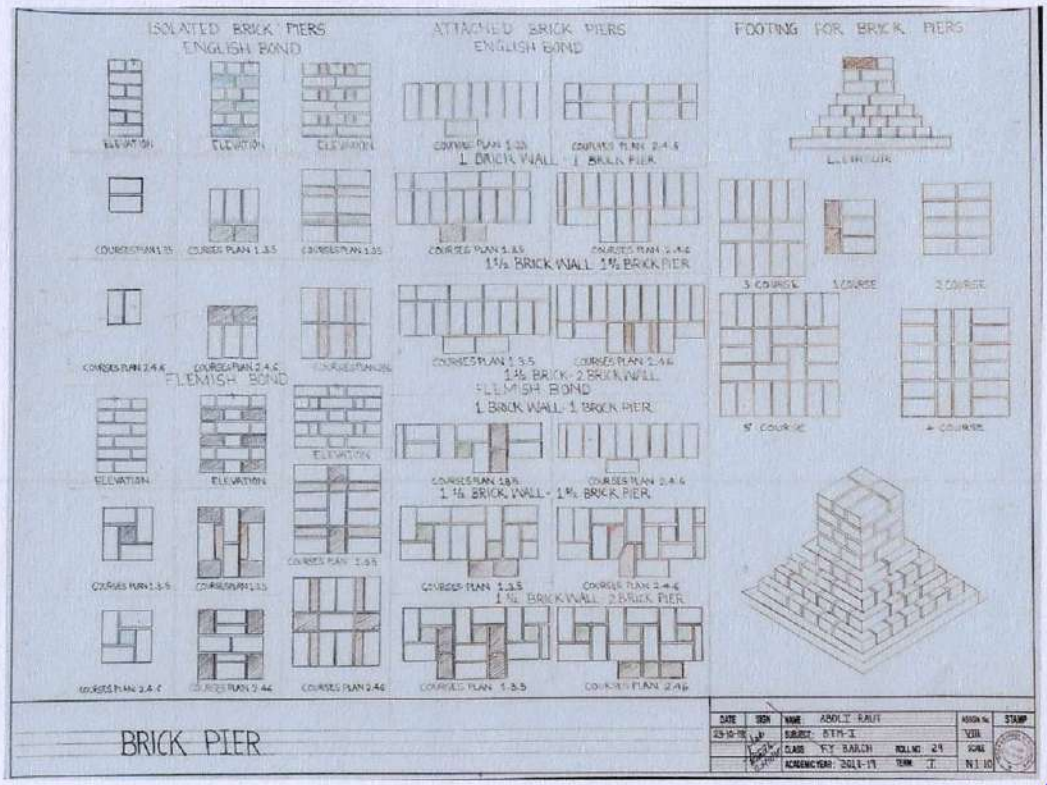

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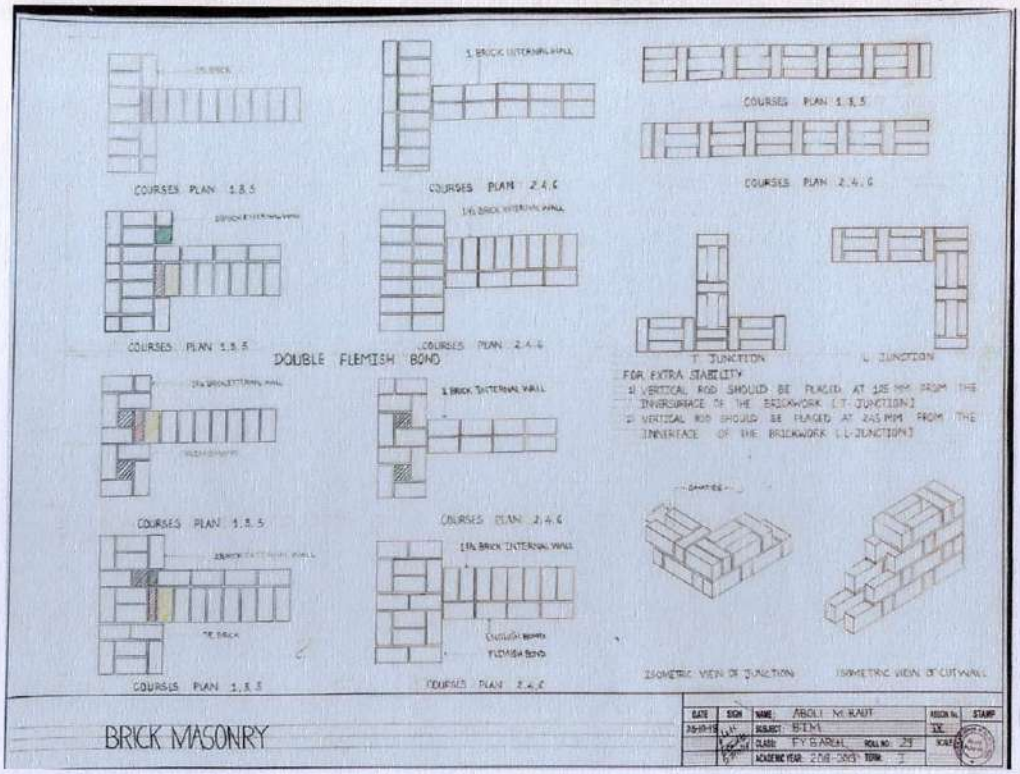

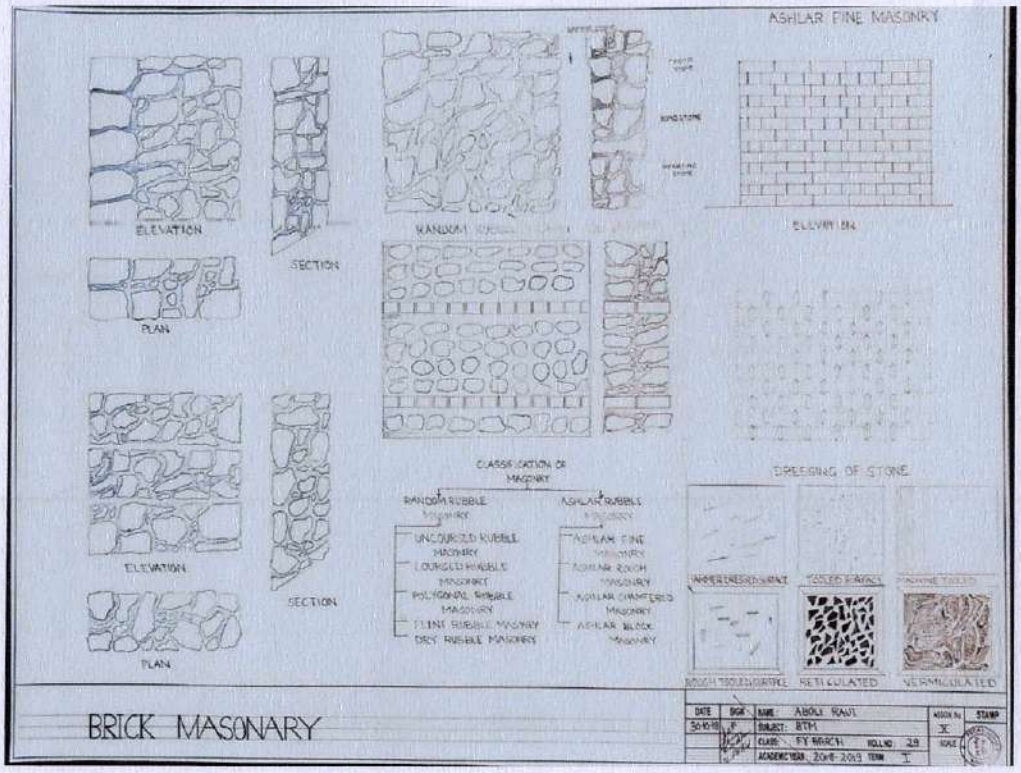

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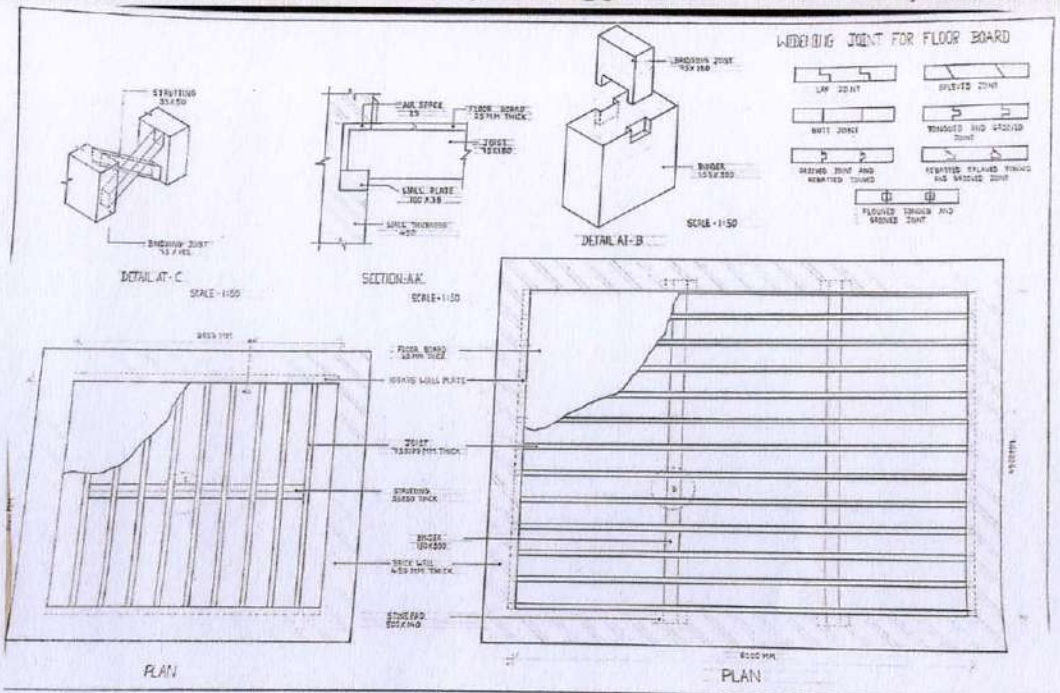
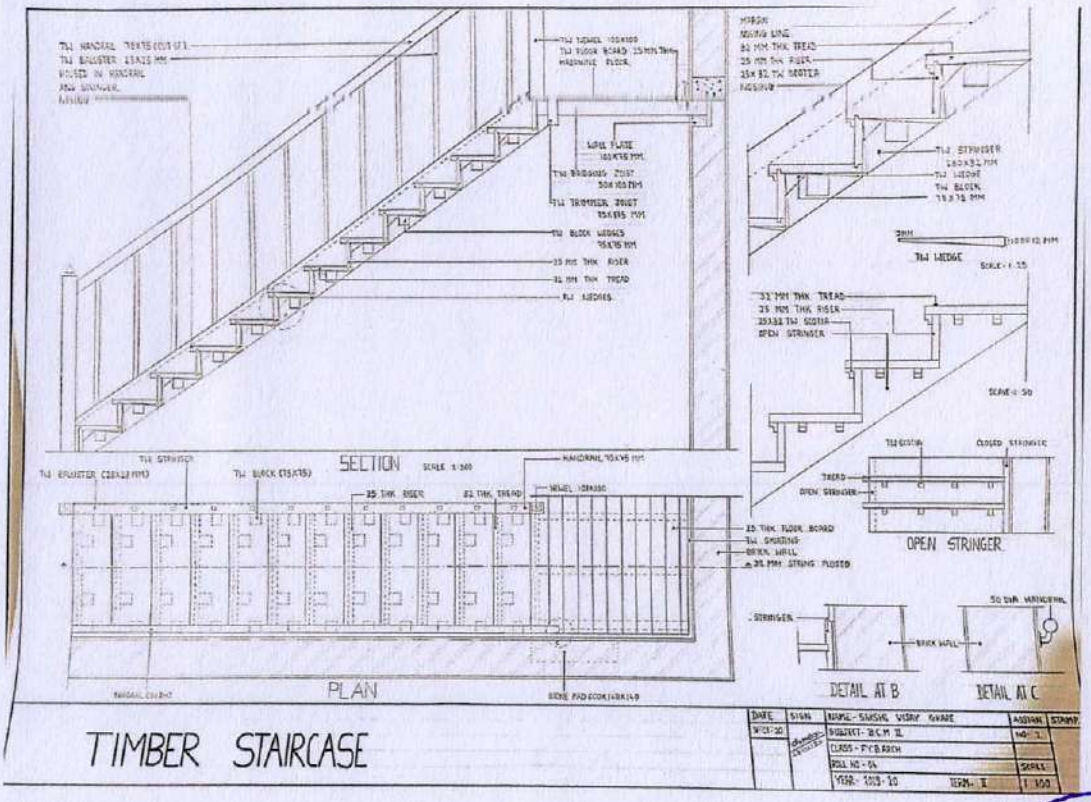


WOODEN JOIST FLOOR



TIMBER STAIRCASE

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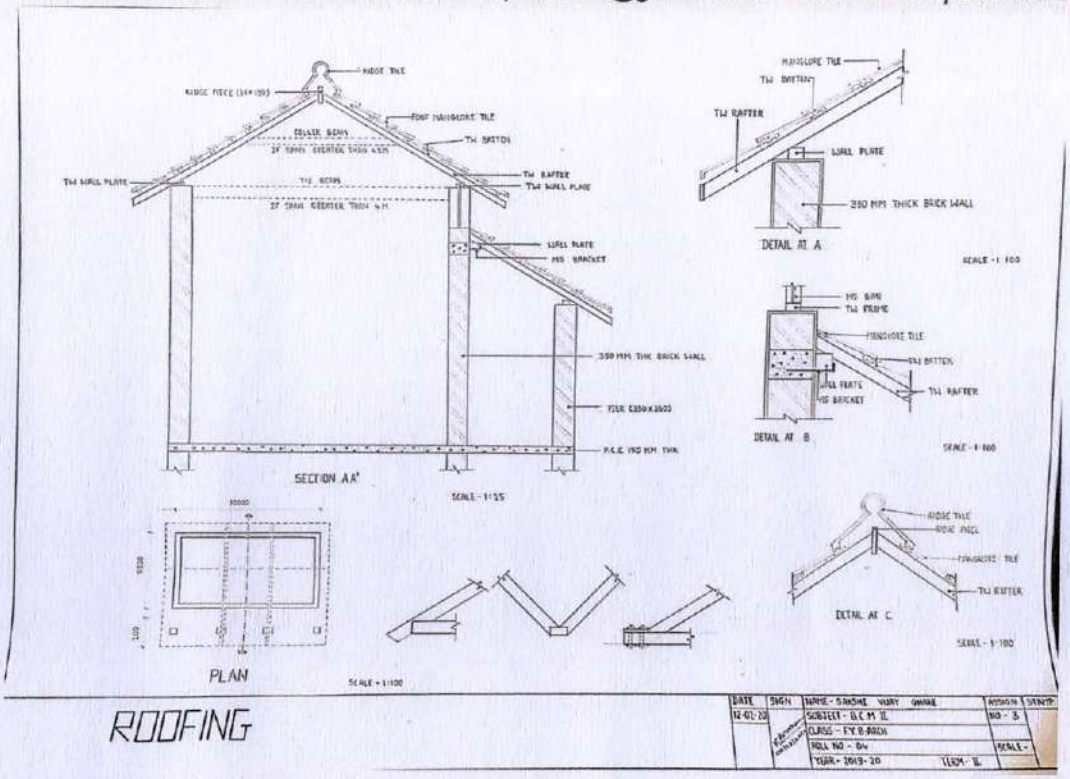

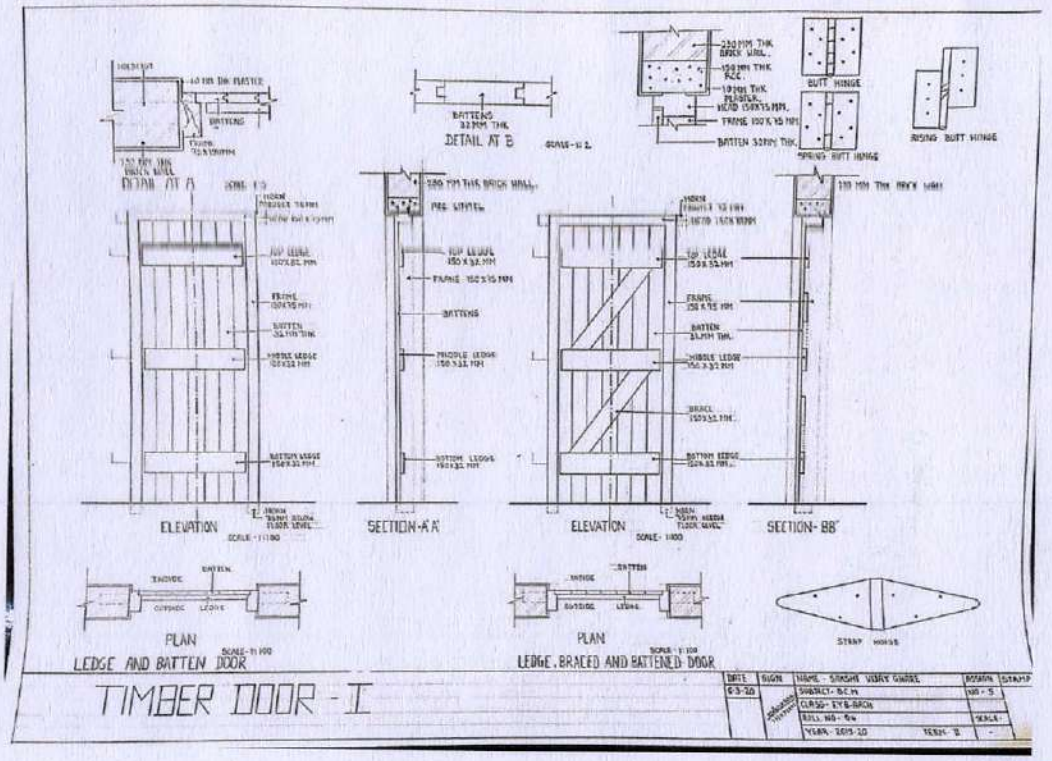

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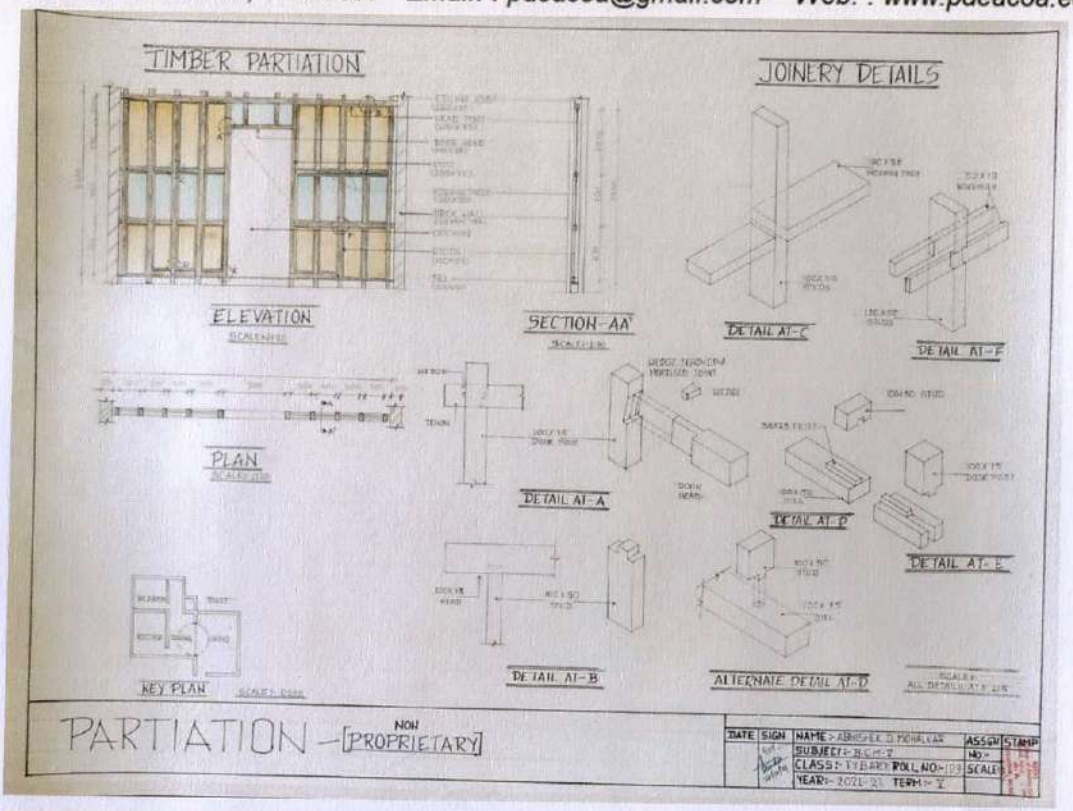

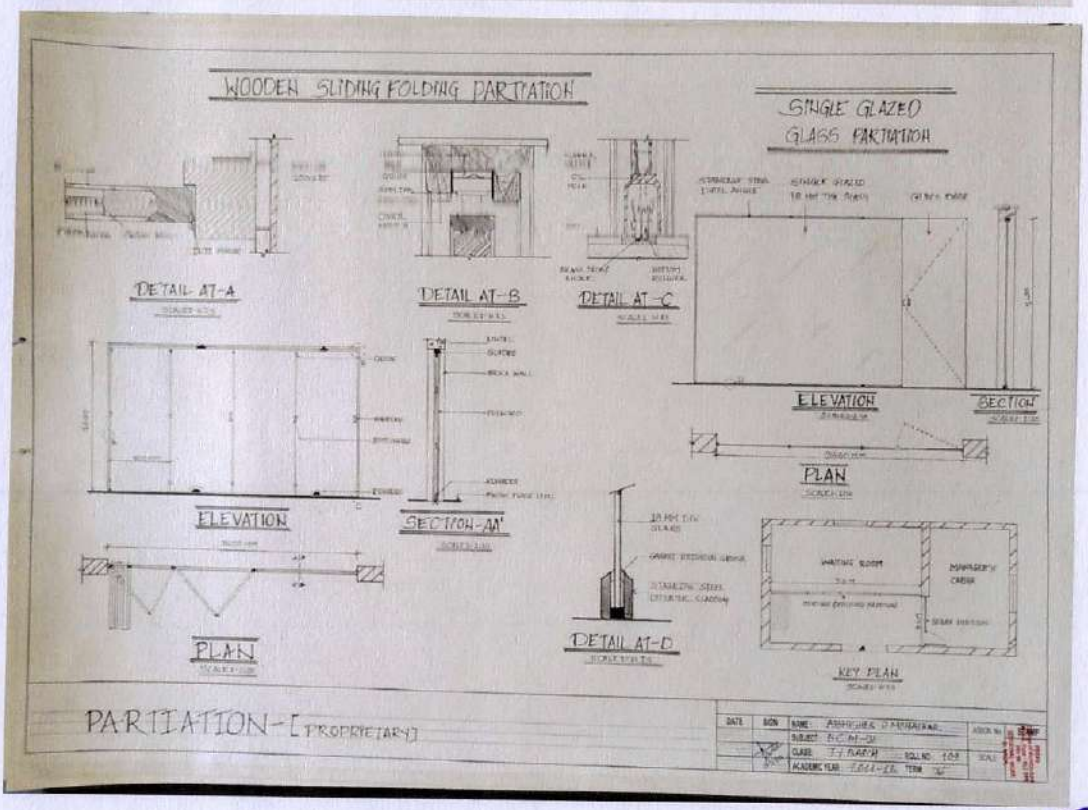

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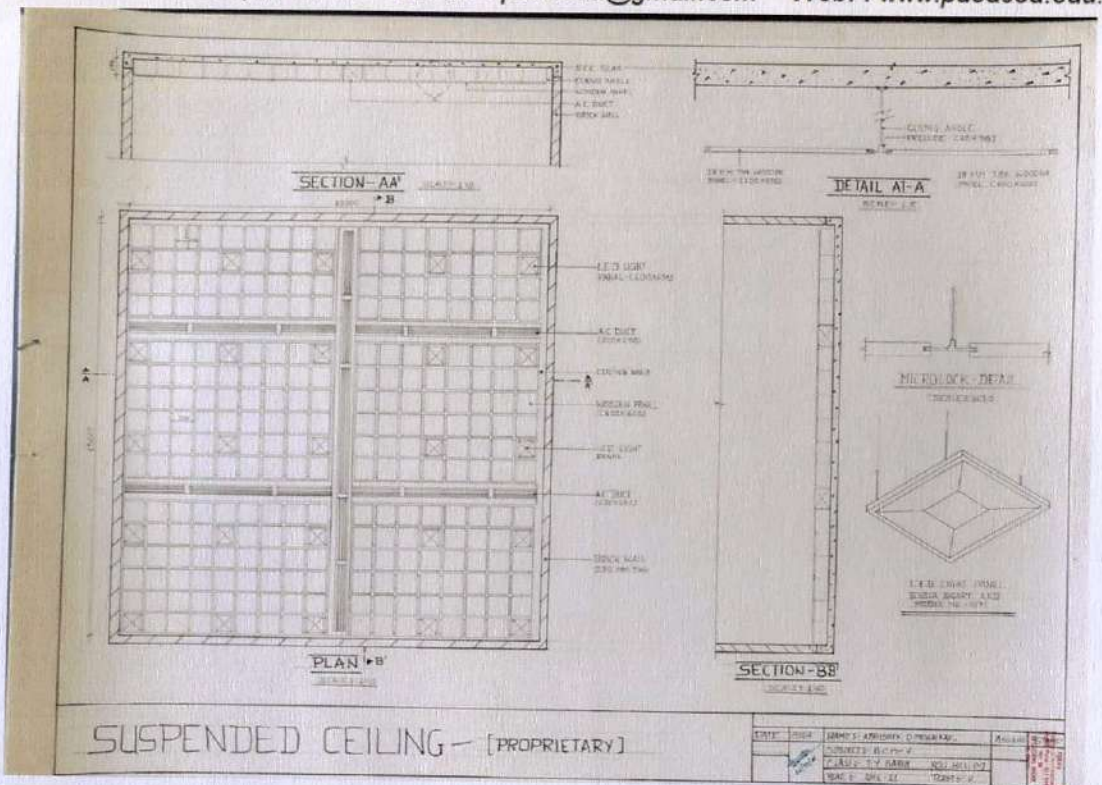

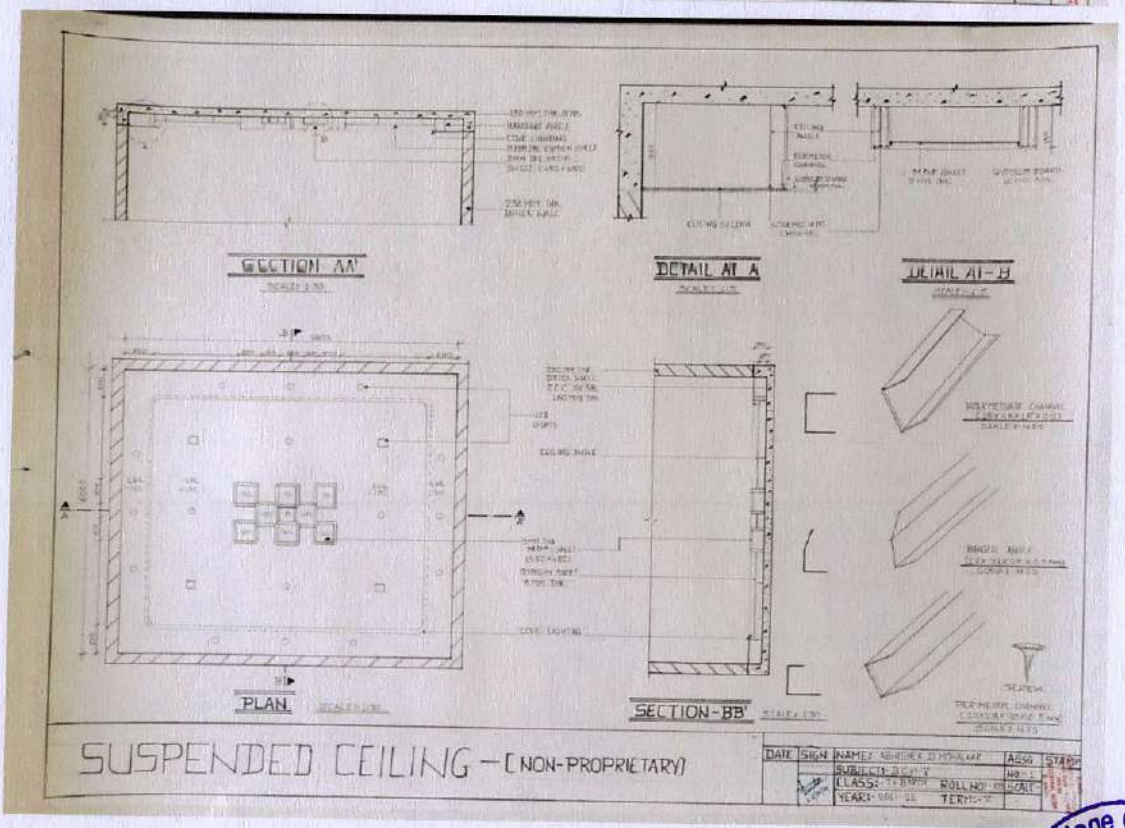

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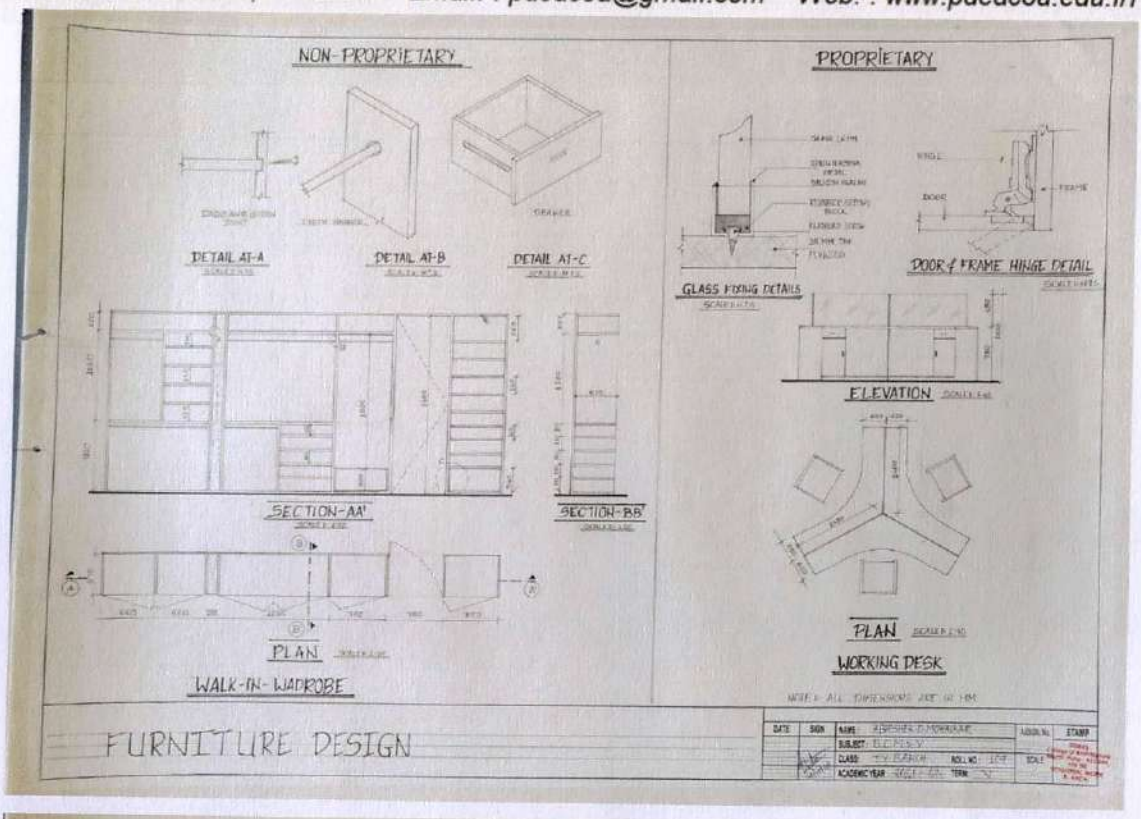

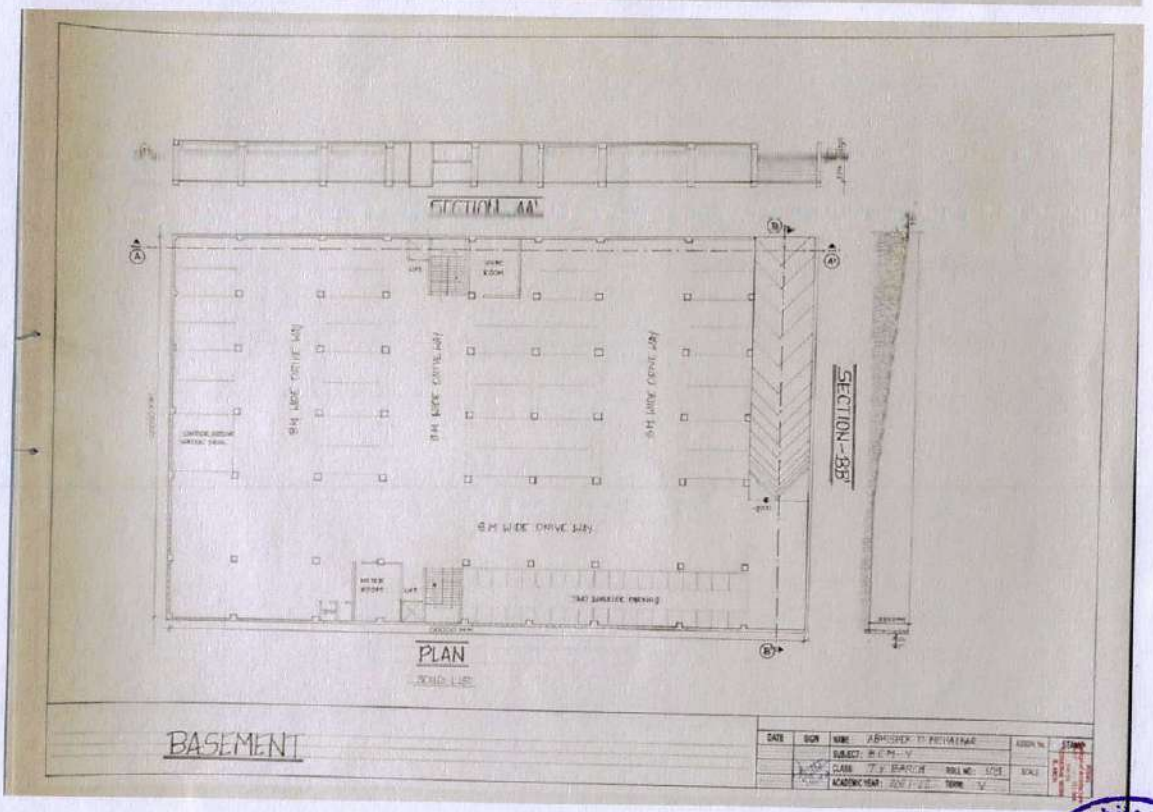

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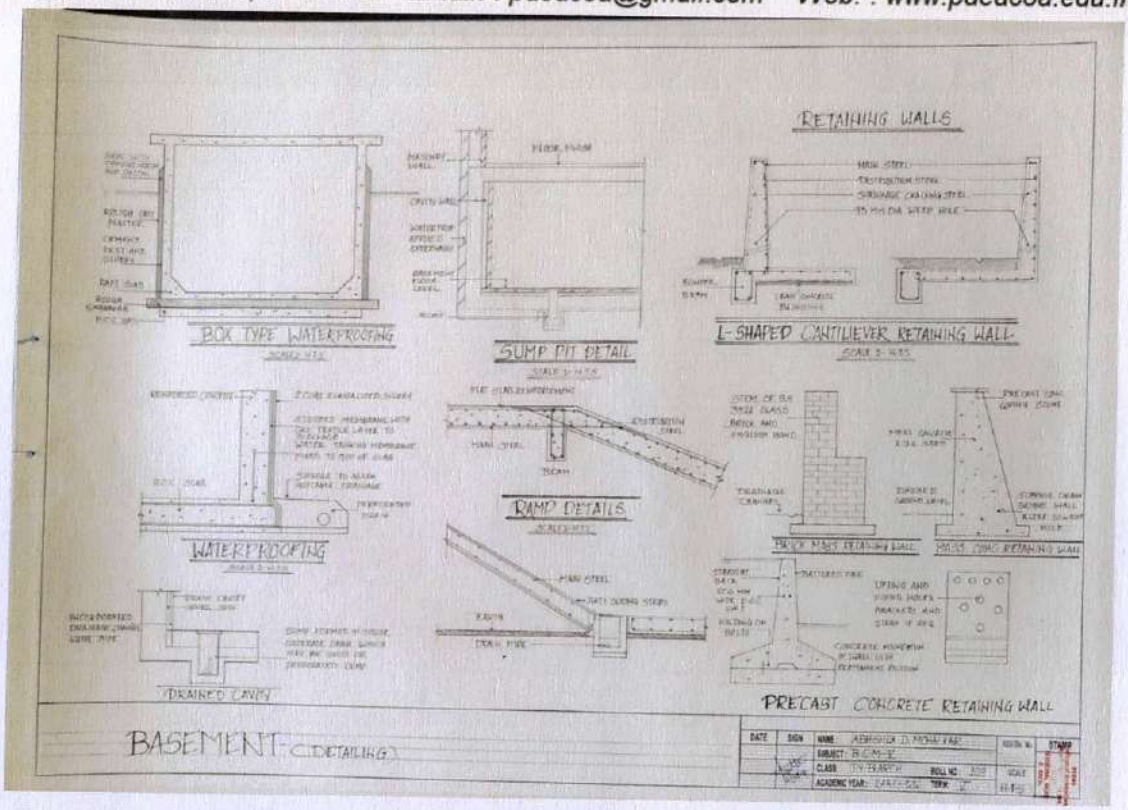


MARKET FORMS OF STRUCTURAL AND NON- STRUCTURAL STEEL

- **MAJOR PRODUCT PRODUCED BY TATA STEEL CO.**

1) HOT AND COLD ROLLED COIL SHEETS
2) GALVANISED SHEETS
3) TUBES
4) WIRE RODS
5) CONSTRUCTION REBARS, RINGS, AND BEARINGS.

- **SEVERAL BRANDS OF TATA STEEL PRODUCTS**

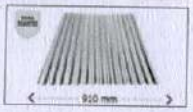
- **TATA STEELIUM**
(PRE-PAINTED GALVANISED COLD ROLLED STEEL)
- **TATA SHAKTEE**
(GALVANISED CORRUGATED SHEET)
- **TATA TISCON**
(REBARS)
- **TATA PIPES**
- **TATA BEARINGS**
- **TATA STRUCTURA**
- **TATA AGRICO**
(HAND TOOLS AND IMPLEMENTS)
- **TATA WIRON**
(GALVANISED WIRE PRODUCTS)

1) TATA SHAKTI:-

TATA SHAKTEE WIDE GC SHEETS:- WITH 13 CORRUGATIONS AND A WIDTH OF 910 MM, TATA SHAKTEE GC SHEETS ARE 13% WIDER THAN STANDARD 800MM GC SHEETS.

TATA SHAKTEE WIDER GC SHEETS:- _ECONOMICAL GC SHEETS IN THE INDIAN MARKET WITH 15 CORRUGATIONS AND A WIDTH OF 1220MM. THIS IS THE ONLY BRAND THAT PRODUCES 4 FT. WIDE GC SHEETS.

TATA SHAKTEE ROOF JUNCTION:- _A ROOFING SOLUTION SERVICE THAT OFFERS BRANDED ROOFING ACCESSORIES FOR INDIVIDUAL HOUSE BUILDERS.



(TATA STEEL)

2) TATA TISCON:-

TATA TISCON 500 :- TATA TISCON 500 IS A HIGH-STRENGTH RIBBED TMT REINFORCEMENT BAR THAT GIVES CONSISTENT STRENGTH.

TATA TISCON SD :- WITH HIGH TENSILE STRENGTH, AND SUPERIOR DUCTILITY, TATA TISCON SD (SUPER DUCTILE) HIGH STRENGTH RIBBED TMT REBARS ARE MADE TO BE BETTER PREPARED FOR EARTHQUAKES IN SEISMIC PRONE ZONES.

TATA TISCON FOOTING:- A PREFABRICATED REBAR KIT THAT MINIMISES CONSTRUCTION MISTAKES AND SPEEDS UP CONSTRUCTION TO AVOID UNNECESSARY HASSLES.

TATA TISCON SUPERLINKS:- HIGH STRENGTH RIBBED TMT REINFORCEMENT BARS THAT PROVIDE LATERAL SUPPORT TO MAIN BARS AGAINST BUCKLING. THEY ARE MADE WITH SOPHISTICATED MACHINES ENSURING STRICTEST QUALITY CONTROL TO ENSURE CONSISTENCY.

3) TATA PIPE:-

AMRIT DHARA

DESIGNED TO PENETRATE DEEP INSIDE THE GROUND OWING TO THEIR HEAVY WEIGHT, THEY ACT AS A SILENT CONTRIBUTING PARTNER TO OUR FARMERS THROUGH BOREWELL AND IRRIGATION APPLICATIONS.

HVAC

THIS RANGE PROVIDES CONTINUOUS AND EFFECTIVE THRUST REQUIRED FOR EFFICIENT FUNCTIONING OF ALL HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS THAT REGULATE ROOM TEMPERATURE, HUMIDITY, AND AIR FLOW.

PIPES FOR FIRE-FIGHTING

TATAPIPES INITIATED THE FIRST OF ITS KIND OFFERING FOR THE FIRE-FIGHTING SEGMENT IN THE FORM OF RED OXIDE COATED PIPES. IT IS EXTENSIVELY USED IN REAL ESTATE PROJECT ALL OVER THE COUNTRY - RESIDENTIAL, COMMERCIAL OR MANUFACTURING SECTORS.

Reference:-
https://www.tatasteel.com/products-solutions/india/segments/construction/
https://www.tatapipes.com/applications/fire-fighting/

MARKET FORMS OF STRUCTURAL AND NON- STRUCTURAL STEEL	DATE	SIGN	NAME:- ABHISHEK D MOHALKAR	ASSG NO:-	STAMP
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MARKET FORMS OF STRUCTURAL AND NON- STRUCTURAL STEEL

- **MAJOR PRODUCT PRODUCED BY TATA STEEL CO.**
1) HOT AND COLD ROLLED COIL SHEETS
2) GALVANISED SHEETS
3) TUBES
4) WIRE RODS
5) CONSTRUCTION REBARS, RINGS, AND BEARINGS

- **SEVERAL BRANDS OF TATA STEEL PRODUCTS**
- **TATA STEELIUM** (WORLDS FIRST BRANDED COLD ROLLED STEEL)
- **TATA SHAKTEE** (GALVANISED CORRUGATED SHEET)
- **TATA TISCON** (REBARS)
- **TATA PIPES**
- **TATA BEARINGS**
- **TATA STRUCTURA**
- **TATA AGRICO** (HAND TOOLS AND IMPLEMENTS)
- **TATA WIRON** (GALVANISED WIRE PRODUCTS)

1) TATA SHAKTI:-

TATA SHAKTEE WIDE GC SHEETS:- WITH 13 CORRUGATIONS AND A WIDTH OF 910 MM, TATA SHAKTEE GC SHEETS ARE 13% WIDER THAN STANDARD 800MM GC SHEETS.

TATA SHAKTEE WIDER GC SHEETS:- ECONOMICAL GC SHEETS IN THE INDIAN MARKET WITH 15 CORRUGATIONS AND A WIDTH OF 1220MM. THIS IS THE ONLY BRAND THAT PRODUCES 4 FT WIDE GC SHEETS.

TATA SHAKTEE ROOF JUNCTION:- A ROOFING SOLUTION SERVICE THAT OFFERS BRANDED ROOFING ACCESSORIES FOR INDIVIDUAL HOUSE-BUILDERS.

2) TATA TISCON:-

TATA TISCON 500 :- TATA TISCON 500 IS A HIGH-STRENGTH RIBBED TMT REINFORCEMENT BAR THAT GIVES CONSISTENT STRENGTH.

TATA TISCON SD :- WITH HIGH TENSILE STRENGTH, AND SUPERIOR DUCTILITY, TATA TISCON SD (SUPER DUCTILE) HIGH STRENGTH RIBBED TMT REBARS ARE MADE TO BE BETTER PREPARED FOR EARTHQUAKES IN SEISMIC-PRONE ZONES.

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3) TATA STRUCTURA+ :-

TATA STRUCTURA Z+ IS A BRAND OF HIGH QUALITY GALVANIZED STEEL TUBES FOR STRUCTURAL APPLICATIONS FROM TUBES SBU, TATA STEEL. TATA STRUCTURA Z+ STEEL TUBES HAVE A GALVANIZED COATING THICKNESS OF 300 GSM OF PURE ZINC. TATA STRUCTURA Z+ IS IDEAL FOR MAKING LONG-LASTING STRUCTURES, ESPECIALLY IN CORROSIVE ENVIRONMENT HAVING HIGH MOISTURE AND SALINITY CONTENT IN THE AIR, SUCH AS COASTAL AND HIGH RAINFALL REGIONS.

SOME PROMINENT APPLICATIONS OF TATA STRUCTURA Z+ ARE **ROOF STRUCTURES** AND **GATES**.

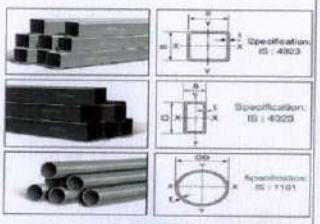
4) TATA STRUCTURA:-

FOLLOWING HIGH QUALITY WELDING, AND STRINGENT QUALITY CONTROL OVER THE FINAL PRODUCT, TATA STRUCTURA STEEL HOLLOW SECTIONS ARE OF FOUR TYPES:

-SQUARE HOLLOW SECTIONS:-
-TATA STRUCTURA SQUARE HOLLOW SECTIONS ARE MANUFACTURED FROM A MINIMUM SIZE OF 20X20 MM TO THE MAXIMUM SIZE OF 250X250 MM WITH THE MINIMUM THICKNESS OF 1.6 MM TO MAXIMUM OF 10 MM.

-RECTANGULAR HOLLOW SECTIONS
-TATA STRUCTURA RECTANGULAR HOLLOW SECTIONS ARE MANUFACTURED FROM A MINIMUM SIZE OF 40X10 MM TO THE MAXIMUM SIZE OF 300X200 MM WITH THE MINIMUM THICKNESS OF 1.6 MM TO MAXIMUM OF 10 MM.

-CIRCULAR HOLLOW SECTIONS:-
TATA STRUCTURA CIRCULAR HOLLOW SECTIONS ARE MANUFACTURED FROM A MINIMUM SIZE OF 15 NB TO THE MAXIMUM SIZE OF 100 NB WITH THE MINIMUM THICKNESS OF 1.0 MM TO MAXIMUM OF 4.5 MM.



4) TATA PIPE>

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5) TATA WIRON:-

• BARE PC STRANDS
PRE-STRESSED STEEL STRAND, WHEN STRESSED AND EMBEDDED IN CONCRETE, LOSES THE APPLIED STRESS EXPONENTIALLY AS TIME PASSES. THE LOSS OF STRESS IS ONE OF THE IMPORTANT FACTORS IN THE DESIGN OF PRE-STRESSED CONCRETE STRUCTURES. TATA WIRON PC STRANDS ARE TREATED BY THE STABILISATION PROCESS, WHICH IS THE MOST WIDELY ACCEPTED METHOD THROUGHOUT THE WORLD.

• PE COATED PC STRANDS
WE HAVE ESTABLISHED A MANUFACTURING FACILITY CAPABLE OF PRODUCING WAX FILLED & EXTRUDED PE COATED PC STRANDS FOR CABLE STAY BRIDGE APPLICATION AND ALSO UNBONDED GREASE FILLED PE COATED PC STRANDS FOR PT SLABS IN THE BUILDING SEGMENT. THE USE OF PE COATED LOW RELAXATION PC STRANDS IS WELL ESTABLISHED IN DEVELOPED COUNTRIES. HOWEVER, IT'S USE IN INDIA WAS RESTRICTED TILL TODAY DUE TO NON-AVAILABILITY OF STRANDS. THESE PRODUCTS ARE MANUFACTURED TO COMPLY WITH THE REQUIREMENTS OF THE (AMERICAN) POST TENSIONING INSTITUTE – PTI, USING BARE STRAND MANUFACTURED USING HIGH QUALITY STEEL WITH STATE-OF-ART DRAWING & STRANDING FACILITIES.

3'3 PC WIRES
3 MM X 3 PLY (3X3) PC STRANDS ARE USED IN PRESTRESSING OF CONCRETE RAILWAY SLEEPERS. "SLEEPER" IS AN ESSENTIAL AND VITAL COMPONENT OF RAILWAY TRACK. EVERY YEAR, RAILWAYS NEED ABOUT 8 TO 10 MILLION NEW SLEEPERS. WIRES ARE STRANDED TO ACHIEVE PERFECT LENGTH AND MECHANICAL PROPERTIES - TENSILE STRENGTH, PROOF STRESS, ELONGATION AND RELAXATION. THIS REPLACES THE EARLIER PRACTICE OF USING WOODEN SLEEPERS AND THUS SAVES MANY TREES ANNUALLY.

BINDING WIRES
TATA STEEL-GLOBAL WIRES INDIA'S PRODUCTS CARRY QUALITY ASSURANCE THAT IS SUPERIOR AND ABSOLUTELY RELIABLE. TATA WIRON BINDING WIRES IS ONE FROM OUR RANGE OF HIGHLY DEPENDENT PRODUCTS. BINDING WIRES CATER TO THE VARIED NEEDS OF DISCERNING CUSTOMERS WHO BELIEVE ONLY IN THE BEST

METAL, METAL ALLOYS AND SHEET ROOF COVERING

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TYPES OF FENCES

AS PER MATERIAL THERE ARE FIVE TYPES OF FENCES.
1) BARBED WIRE FENCING
2) CHAINLINK FENCEING
3) WELDED WIRE MESH
4) METAL FENCING
5) PRECAST PANEL FENCING

1) BARBED WIRE FENCING:-

ALSO KNOWN AS BARWIRE, IS MADE OF BARBED STEEL, ALUMINUM ALLOY STEEL OR STAINLESS STEEL. IT CAN BE USED INDIVIDUALLY TO FORM THE BARBED WIRE FENCE, AND IT ALSO CAN BE ATTACHED ONTO VARIOUS FENCES, SUCH AS CHAIN LINK FENCE, WELDED WIRE MESH FENCE OR PALISADE FENCE FOR HIGH LEVEL SECURITY BARRIER. ITS WIDELY USED FOR FARM FENCING, RANCH FENCING, AIRPORT FENCING, BUILDING FENCING, LARGE CONSTRUCTION SITE FENCING AND SO ON. COMPARED WITH OTHER FENCES, OUR BARBED WIRE PRODUCE IS STRONGER, MORE DURABLE AND HAS HIGHER LEVEL OF SECURITY. ITS SHARP EDGE CAN FRIGHTEN INTRUDERS AND THIEVES, AND IT IS AVAILABLE TO COMBINE WITH OTHER FENCES FOR SECURITY BARRIERS.

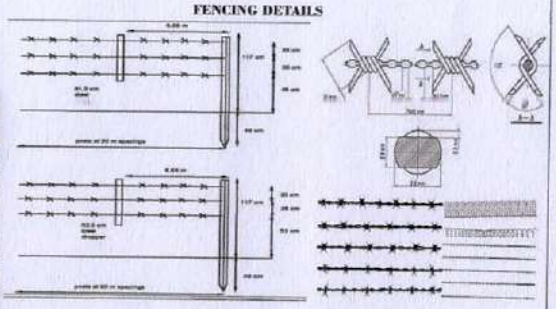
FEATURE:-
- SHARP EDGE FRIGHTENS INTRUDERS AND THIEVES.
- HIGH STABILITY, RIGIDITY, AND TENSILE STRENGTH, TO PREVENT CUTTING OR DESTROYING.
- ANTI-ACID AND ALKALI.
- HARSH ENVIRONMENT RESISTANCE, CORROSION AND RUST RESISTANCE, AVAILABLE TO COMBINE WITH OTHER FENCES FOR HIGH LEVEL SECURITY BARRIER.
- SIMPLE AND CONVENIENT INSTALLATION AND UNINSTALLATION.
- EASY TO MAINTAIN, DURABLE AND LONG SERVICE LIFE.

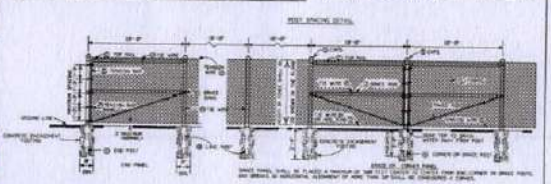
APPLICATIONS:-
- AIRPORT FENCING.
- PRISON FENCING.
- MILITARY SITE FENCING.
- CONSTRUCTION SITE FENCING.
- SQUARE FENCING.
- FARM FENCING.
- RANCH FENCING.
- HIGHWAY FENCING.
- RAILWAY FENCING.
- RESIDENCE FENCING.
- BUILDING WALL FENCING.
- ORCHARD FENCING.
- GARDEN FENCING.
- PLANT FENCING.

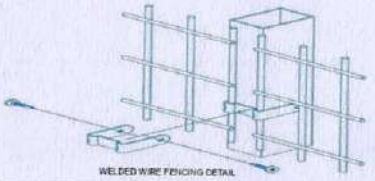
2) CHAIN LINK FENCING:-
- CHAINLINK FENCES TO MARK BOUNDARIES AND FOR CATTLE.
- CHAINLIN FENCES INTENDED TO DISCOURAGE HUMAN PENETRATION
- INSTALLATION:-
- TERMINAL POST:- A POST TO WHICH THE CHAIN LINK FABRIC IS TERMINATED USING SPECIFIC FITTINGS. END POST, CORNER POST, GATE POST, AND PULL POST.
- LINE POST:- INTERMEDIATE POSTS SET NO GREATER THAN 10 FEET ON CENTRES BETWEEN THE TERMINAL POSTS.
- DEPTH OF HOLE:- 24 INCHES FOR 4 M. FENCE AND ADDITIONAL 3 INCHES FOR EVERY ADDITIONAL FEET OF FENCE HEIGHT.
- UDER NORMAL CONDITIONS THE DIAMETER SHALL BE FOUR TIMES THE LARGEST CROSS SECTION OF THE POST UPTO 4 IN OUTSIDE DIAMETER AND THREE TIMS FOR LARGER OUTSIDE DIAMETER.

3) WELDED WIRE MESH:-
- WELDED WIRE MESH IS THE LATEST DEVELOPMENT IN LAND WIRE PRODUCT INDUSTRY. THE WELDED WIRE, GENERALLY CALLED REINFORCING WIRE, IS MOSTLY USED IN CEMENT CONCRETE WORK FOR CONSTRUCTION OF BUILDINGS, NATIONAL HIGHWAY PAVEMENTS, RUNWAYS, DAMS, AIRPORTS ETC. IT IS ALSO USED FOR FENCING PURPOSES AND FOR PARTITION WALLS AND AS A SAFETY GUARD IN ENGINEERING WORKSHOPS.
- WELDED WIRE MESH IS USED EXTENSIVELY IN CONSTRUCTIONAL WORK AND FENCING PURPOSES. THE WIRE MESH IS MADE BY AUTOMATIC WELDING PROCESS, THUS SAVING A LOT OF HUMAN LABOUR AND ACHIEVING UNIFORMITY IN DISTANCE AND QUALITY.

FENCING DETAILS







FENCING AND GATES-I

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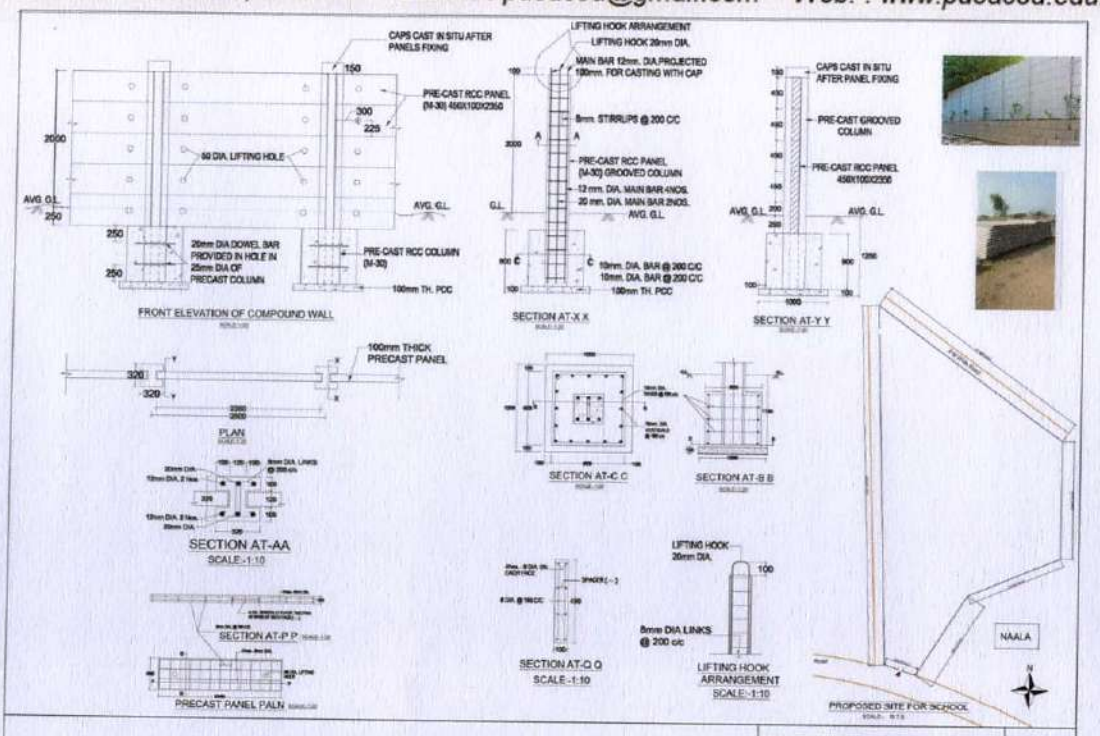

FENCING DETAILING SHEETS

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GATE SYSTEM

GATE SYSTEMS ARE DESIGNED TO WORK EFFICIENTLY AND TROUBLE-FREE IN VIRTUALLY ANY SETTING.

- FOLLOWING ARE THE COMMONLY USED TYPES OF GATE.
- SWING GATE
- ALUMINIUM TRACK CANTILEVER GATES
- ALUMINIUM OR STEEL MOORAL TRACK CANTILEVER GATES, AND
- V-WHEEL ROLLER GATES.

GATE SYSTEMS ARE ENGINEERED BASED ON SIZE AND WEIGHT TO ARRIVE AT THE INSTALLATION SITE WITH THE CORRECT FRAME SIZE,TUBE SIZE, AND HARDWARE FOR A SPECIFIED REQUIREMENT OR APPLICATION.

1) SWING GATE SYSTEM:-

SWING GATES ARE FURNISHED IN GALVANIZED STEEL, ALUMINIUM, OR STAINLESS STEEL, WITH TUBE FRAMES, INFILL PANELS,POSTS HINGES, A PADLOCKABLE SLIDE BOLT, AND PADLOCKABLE CANE BOLT. SWING GATES CAN BE FURNISHED AS:

- SINGLE SWING GATES
- DOUBLE SWING GATES, OR
- DOUBLE BIFOLD GATES.

- **SINGLE SWING GATE:-** SINGLE SWING GATES CAN BE FURNISHED WITH A LOCK BOX AND/OR MOUNTING PLATES FOR PANIC BAR HARDWARE. ALWAYS CLEARLY SHOW IN THE GATE DRAWINGS.
- **DOUBLE SWING GATE:-** TUBE FRAME SIZE , POST SIZE, AND HINGES ARE THE KEY TO A PROPERLY OPERATING DOUBLE SWING GATES. A PADLOCKABLE CANE BOLT AND SLIDE BOLT WILL BE PROVIDED UNLESS SPECIFIED, OTHERWISE PANIC BAR HARDWARE CAN BE INSTALLED ON DOUBLE SWING GATES, BUT A CENTRE POST IS REQUIRED TO LOCK IT CORRECTLY. IF ACCESS TO THE HOLE OPENINGS IS REQUIRE, A REMOVABLE CENTRE POST CAN BE INSTALLED.
- **BIFOLD, DOUBLE SWING GATE SYSTEM:-** BIFOLD, DOUBLE SWING GATE SYSTEMS ARE IDEAL FOR SITUATIONS WHERE YOU NEED THE GATE TO BE OUT OF THE WAY, AND YO DO NOT HAVE ROOM FOR A CANTILEVER GATE. THEY ARE ALSO USED FOR PROJECTS WHERE A GRADE ISSUE WILL NOT ALLO A REGULAR SWING GATE TO OPEN PROPERLY. ADDITIONAL CANE BOLTS ARE REQUIRED FOR A BIFOLD, DOUBLE SWING GATE TO WORK PROPERLY.


SINGLE SWING GATE


DOUBLE SWING GATE


BIFOLD, DOUBLE SWING GATE

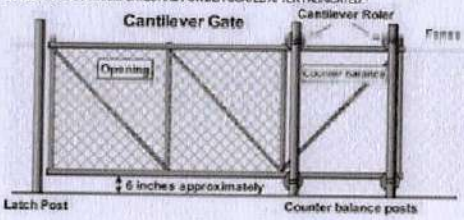
3) V- WHEEL ROLLER GATE SYSTEM:-

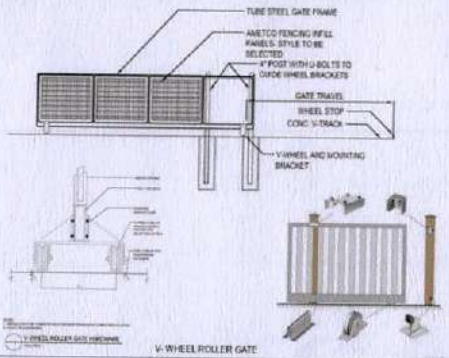
- V-WHEEL ROLLER GATES ARE CUSTOM FABRICATED TO FIT SPECIFIC REQUIREMENTS. THEY ARE AVAILABLE WITH A DUAL TRACK OPTION, IDEAL FOR LARGER OPENINGS, AND SINGLE TRACK OPTION. THESE ARE HIGH MAINTAINANCE GATES. CONSIDER WEATHER CONDITIONS IN THE AREA BEFORE SPECIFYING A V-WHEEL ROLLER GATE. AREAS THAT ARE PRONE TO SNOW AND ICE CAN RENDER THESE GATES INEFFECTIVE WITHOUT PROPER MAINTAINANCE.
- V-WHEEL ROLLER GATES ARE FURNISHED WITH GATE FRAMES, INFILL PANELS, POSTS, U-BOLTS, GUIDE WHEEL BRACKETS, V-TRACK, AND A WHEEL STOP. V-WHEELS ARE MADE OF STEEL OR PLSTICS, ACCORDING TO APPLICATION REQUIREMENTS. V-WHEEL ROLLER GATES DO REQUIRE A HIGHER NEED OF MAINTENANCE FOR PROBLEM FREE OPERATION.

2) CANTILEVER GATE SYSTEM:-

A CANTILEVER GATE MOVES IN LINEAR MOTION , OFTEN USING LESS SPACE THAN A SWING GATE. IT IS ABLE TO CLOSE AN OPENING WHILE BEING SUPPORTED AT ONE END. CANTILEVER GATES ARE CUSTOM FABRICATED TO FIT PROJECT- SPECIFIC REQUIREMENTS.

CANTILEVER GATE TRACKS ARE MANUFACTURED FROM STEEL OR ALUMINIUM. STEEL GATE FRAMES AND INFILL PANELS ARE HOT-DIP GALVANIZED AND POWDER COATED FOR MAINTAINACE-FREE PROTECTION FROM THE ELEMENTS. ALUMINIUM GATES ARE POWDER COATED AFTER FABRICATED.





V- WHEEL ROLLER GATE

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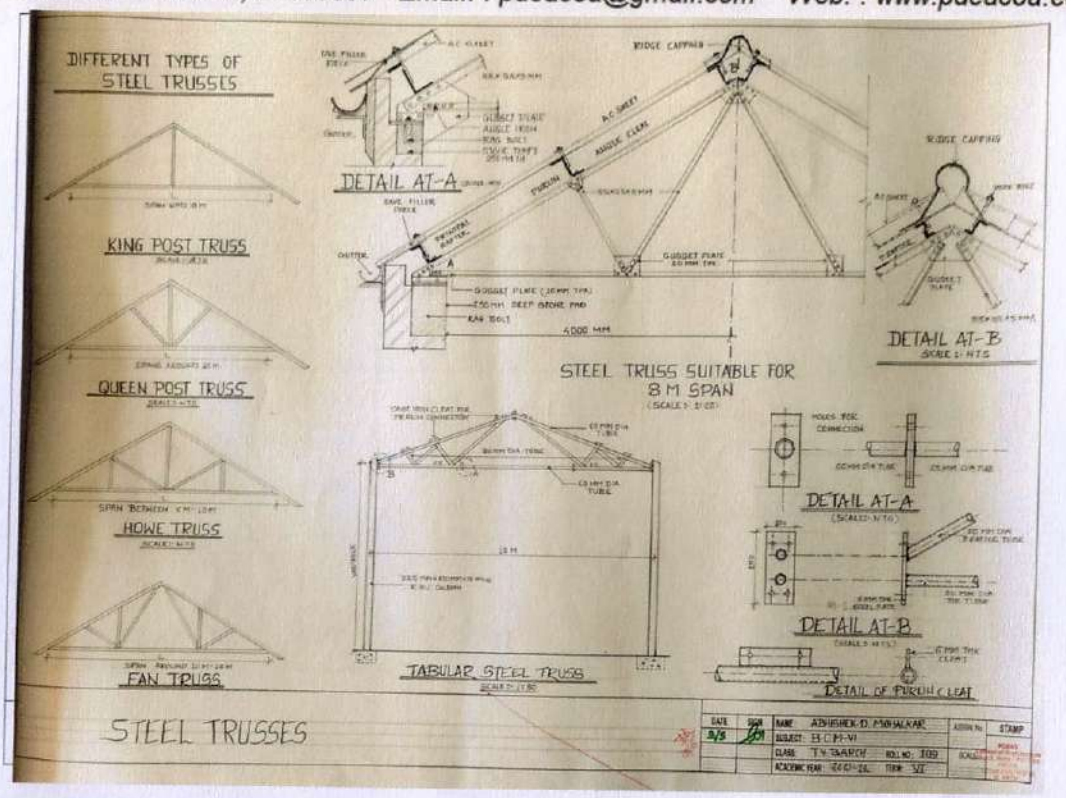

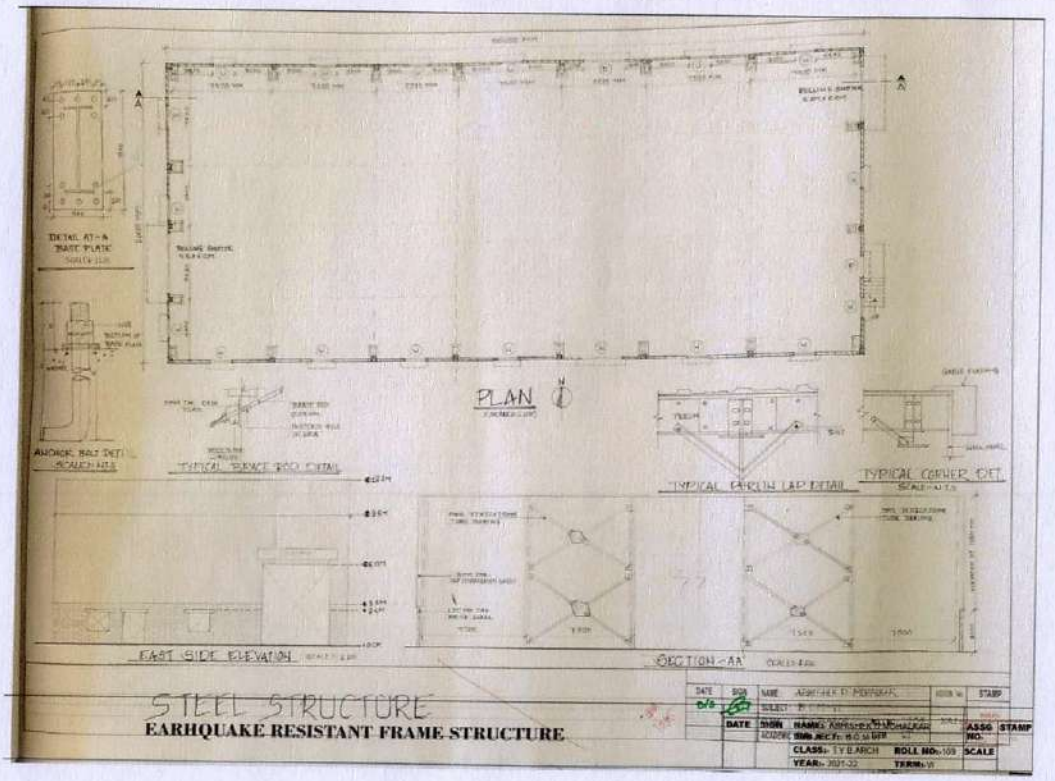

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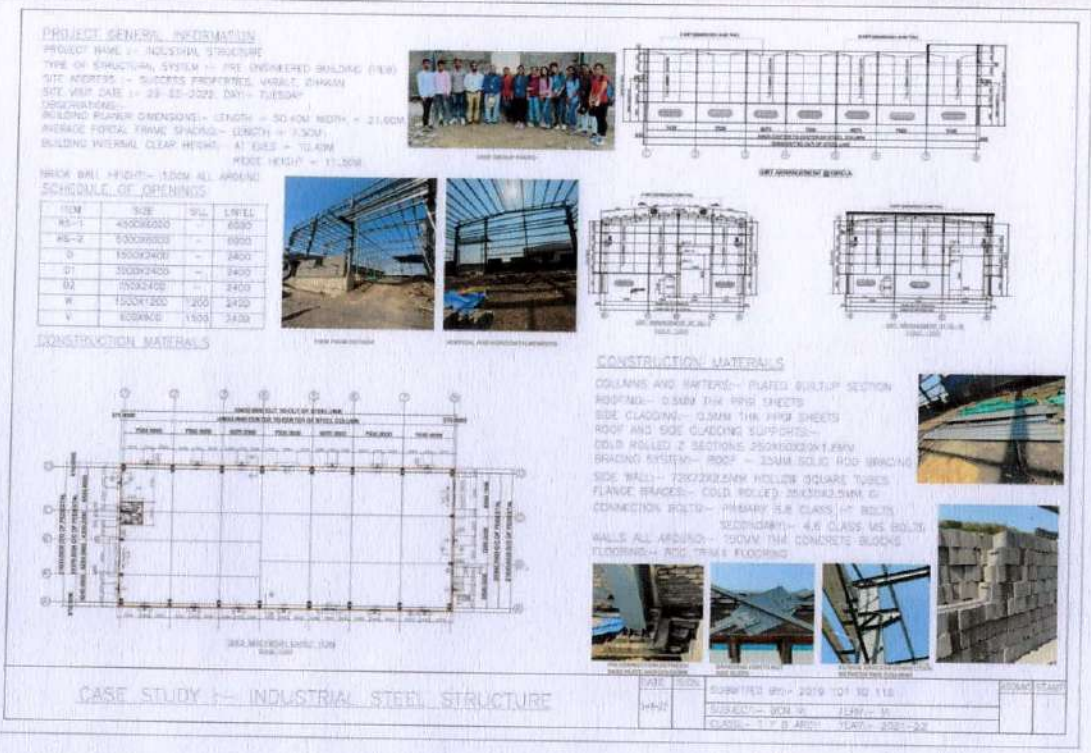

MOORGATE EXCHANGE, LONDON CASE STUDY

END CLIENT: TELEX SARL
ARCHITECT: HKR ARCHITECTS
PRINCIPAL CONTRACTOR: SKANSKA
STRUCTURAL ENGINEER: BAMBOO I
STEEL WORK CONTRACTOR: COMTEFIELD (UK) LTD
PRODUCT: CELSIUS® 355 CIRCULAR HOLLOW SECTION

BRIEF:-

COMPLETED IN THE SPRING OF 2014, MOORGATE EXCHANGE IS A 12-STOREY OFFICE BUILDING CONSTRUCTED ON THE SITE OF THE CITY OF LONDON'S OLD TELEPHONE EXCHANGE. MAXIMISATION OF INTERNAL SPACE WAS A KEY DRIVER IN THE DEVELOPMENT OF THE BUILDING. TATA STEEL'S HOT- FINISHED CELSIUS® 355 CIRCULAR HOLLOW SECTION (CHS) – UTILISED AS INTERNAL AND PERIMETER COLUMNS - PLAYED A BIG PART IN REALISING THIS AMBITION.

TATA STEEL'S FIRESOFT DESIGN SOFTWARE WAS USED TO PRODUCE AN INNOVATIVE COMPOSITE COLUMN DESIGN. THIS ENSURED CELSIUS® 355 DELIVERED THE REQUIRED STRENGTH AND FIRE PERFORMANCE WHILST REMAINING THE SIZE OF THE PERIMETER COLUMNS. THE NOVEL DESIGN REMOVED THE NEED FOR AN INTUMESCENT COATING ON THE COLUMNS, COUPLED WITH THE EXCELLENT STEEL SURFACE FINISH, THIS ALLOWED APPLICATION OF A SLEEK ARCHITECTURAL COATING.

DESIGN:-

- THE 20,000 M2 STEEL FRAME BUILDING IS ARRANGED WITH TWO MAIN CORES TO PROVIDE LATERAL STABILITY AND A CENTRAL ATRIUM WHICH DRAWS NATURAL LIGHT INTO THE SURROUNDING OFFICE ACCOMMODATION (FIGURE 2). OPEN SPACE, LONG COLUMN-FREE AREAS WERE A PRIORITY, WHICH LED TO A 15.5 M BY 7.5 M STRUCTURAL GRID. THE DESIGN ENSURES FLEXIBILITY, AS ALL OF THE FLOORS CAN BE SUBDIVIDED IF NECESSARY.
- THE STEEL FRAME WAS DESIGNED WITH EASE OF FABRICATION IN MIND, FOR EXAMPLE STANDARD PLATE THICKNESSES WERE USED WHEREVER POSSIBLE TO FABRICATE A NUMBER OF DIFFERENT BEAMS.
- IN ORDER TO MAXIMIZE THE AVAILABLE SPACE AND ACHIEVE THE REQUIRED 90 MINUTES FIRE PERFORMANCE, THE INTERNAL AND PERIMETER COLUMNS ARE CONCRETE-FILLED CIRCULAR HOLLOW STEEL SECTIONS, DESIGNED ACCORDING TO EUROCODE 4 (EN 1994). THE COMPOSITE COLUMNS USED AROUND THE PERIMETER OF THE BUILDING HAD A DIAMETER OF 457 MM (12.5 MM AND 16 MM THICKNESS). IF A STEEL ONLY SOLUTION HAD BEEN CHOSEN, THE DIAMETER WOULD HAVE BEEN 610 MM. THE INTERNAL COLUMNS HAD A DIAMETER OF 508 MM AND THICKNESS OF 16 MM AND 20 MM.
- THE BEAMS WERE CELLULAR I-BEAMS, GENERALLY OF 550 MM DEPTH, TO ALLOW INTEGRATION OF THE SERVICES WITHIN THE STRUCTURAL ZONE AND HENCE INCREASE FLOOR-TO-CEILING HEIGHTS. THIS ENABLED AN ADDITIONAL FLOOR TO BE ADDED TO THE TOP OF THE BUILDING, WHILST ABIDING WITH THE HEIGHT RESTRICTIONS. THIS FLOOR SYSTEM IS USED ON ALL THE FLOORS, WITH SHALLOWER BUT HEAVIER BEAMS UNDERNEATH THE ROOF GARDENS, TO ALLOW FOR WATERPROOFING AND DRAINAGE.
- TO ACHIEVE AN ACCEPTABLE DYNAMIC PERFORMANCE OF THE LONG SPAN FLOOR SYSTEM, SECONDARY OR STIFFENER BEAMS AT MIDSPAN WERE INSERTED BETWEEN THE MAIN BEAMS, WHICH INCREASED THE STIFFNESS OF THE FLOOR WITHOUT ADDING MUCH MORE MASS AND SUCCESSFULLY REDUCED THE RESPONSE FACTOR.
- THE LOAD WAS TRANSMITTED VIA A TRANSFER BEAM STRUCTURE AT THE SECOND FLOOR TO TWO ROWS OF FOUR PAIRS OF V SHAPED COLUMNS (FIGURE 3). THE RAKED COLUMNS WERE FORMED FROM PLATED BOX SECTIONS AND ENCASED IN CONCRETE. THE PLATED BOX SECTIONS TAPER FROM 900 MM TO 600 MM IN WIDTH ALONG THE MEMBER FROM THE BASE UPWARDS AND WEIGH 11 TONNES EACH. THEY ARE BOLTED TO THE UNDERSIDE OF THE SECOND FLOOR BEAM AT THE TOP AND TO A PREFABRICATED NODE AT THE BOTTOM. THE TWO COLUMNS FORM A 90° 2-WAY NODE AT THE BOTTOM, WHICH IS ENCASED IN THE CONCRETE BASE (FIGURE 4). THE NODES THEMSELVES WEIGH 3 TONNES. THE COLUMNS FEATURE A 1.5 M STEP BACK OF THE STEEL FRAME ON THE TWO LONG ELEVATIONS ON THE SECOND FLOOR. THE FIRST FLOOR IS SUSPENDED BY A SERIES OF HANGERS FROM THE SECOND FLOOR, OFFERING A GROUND FLOOR FREE OF COLUMNS.
- THE MEMBERS WHICH WERE EXTERNALLY EXPOSED WERE GALVANISED TO ENSURE SUFFICIENT DURABILITY TO ACHIEVE A 50 YEAR DESIGN LIFE FOR THE BUILDING.

- CONCRETE FILLED CHS COLUMNS WITH REINFORCING BAR CAGES WERE UTILISED TO PROVIDE 90 MINUTES FIRE PROTECTION WITHOUT THE NEED FOR ANY EXTERNAL FIRE PROTECTION ON ALL OF THE INTERNAL AND PERIMETER COLUMNS. TATA STEEL'S FIRESOFT DESIGN SOFTWARE WAS USED FOR THIS ANALYSIS. THIS, COUPLED WITH A STRUCTURAL FIRE ENGINEERING ANALYSIS ON THE FLOOR PLATES, ALLOWED INTUMESCENT PAINT TO
- THE CHS COLUMNS WERE FIRE PROTECTED LOCALLY AROUND THE CONNECTION ZONES WITH
- INTUMESCENT PAINT TO ACHIEVE THE REQUIRED 90 MINUTES FIRE RESISTANCE.

ERECTION AND FABRICATION:-

THE STEEL FRAME WAS ERECTED IN 20 WEEKS, JUST AFTER THE SLIP FORMED CORES WERE CONSTRUCTED. PROVISION FOR A TOWER CRANE THROUGH THE FLOOR PLATES WAS INCLUDED IN THE BASE FLOOR DESIGN. STUBS WELDED TO THE SECTIONS ENABLED FAST AND EFFICIENT CONNECTIONS TO BE ACHIEVED. THE INSTALLATION OF THE RAKING COLUMNS REQUIRED PROPPING DURING THE ERECTION PROCESS, UNTIL FABRICATION OF THE CONNECTIONS AT THE TOP AND BOTTOM OF THE COLUMN WAS COMPLETED. COORDINATION OF THE CONSTRUCTION OF THE STEEL FRAME WITH THE CLADDING INTERFACES WAS A COMPLEX TASK BECAUSE STRICT GLAZING TOLERANCES HAD TO BE MET.

STEEL STRUCTURE CONSTRUCTION

DATE	SIGN	NAME:- ABHISHEK D MOHALKAR		ASSG NO.	STAMP
		SUBJECT:- B.C M-VI			
		CLASS:- T.Y.B.ARCH	ROLL NO:-169	SCALE	
		YEAR:- 2021-22	TERM:-VI		

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PRECAST R.C WAFFLE UNIT

(ALTERNATE OF CONVENTIONAL CAST-IN-SITE RCC FLOOR/ROOF)

WAFFLE SLAB:-

WAFFLE SLAB IS A STRUCTURAL COMPONENT WHICH IS PLAIN ON IT'S TOP AND CONTAINS GRID LIKE SYSTEM ON ITS BOTTOM SURFACE. THE TOP OF RIBBED SLAB IS NORMALLY THIN AND THE BOTTOM GRID LINES ARE GENERALLY RIBS WHICH ARE LAID PERPENDICULAR TO EACH OTHER WITH EQUAL DEPTH. WAFFLE SLAB HAS TWO DIRECTIONAL REINFORCEMENT.

ABOUT THE TECHNOLOGY

THIS SCHEME IS SUITABLE FOR FLOORS/ROOFS SPANNING IN TWO DIRECTIONS, HAVING A SPAN OF 9M OR ABOVE IN EITHER DIRECTION. IT CONSISTS OF NOMINALLY REINFORCED PRECAST CONCRETE UNITS, CALLED WAFFLE UNITS, LAID IN A GRID PATTERN AND CAST-IN-SITU CONCRETE IN THE JOINTS BETWEEN THEM, TOGETHER WITH THE REQUIRED AMOUNT OF REINFORCEMENT. NO DECK CONCRETE IS PROVIDED OVER THE UNITS. THE FINISHED SLAB HAS A PLEASANT GRID PATTERN IN THE SOFFIT.

THE UNITS ARE IN THE SHAPE OF INVERTED TROUGH, SQUARE OR RECTANGULAR IN PLAN, HAVING LATERAL DIMENSIONS UP TO 1200MM. REINFORCEMENT IS PROVIDED IN THE FLANGE IN THE FORM OF STEEL WIRE FABRIC HAVING 3MM DIA. WIRES AT 150 MM. CENTRE TO CENTRE DISTANCE BOTH WAYS.

THE MID SPAN SECTIONS ARE DESIGNED AS TEE SECTIONS WITH PRECAST FLANGE TAKING THE COMPRESSION AND MAIN REINFORCEMENT AT THE BOTTOM OF IN -SITU CONCRETE TAKING THE TENSION. THE SUPPORT SECTIONS ARE DESIGNED AS DOUBLY REINFORCED RECTANGULAR BEAMS WITH A WIDTH EQUAL TO THE SUM OF THE THICKNESS OF THE PRECAST WEBS AND WIDTH OF IN-SITU CONCRETE JOINT.

THE MOULD CONSISTS, MAINLY, OF TWO PARTS- PERIPHERAL FRAME WHICH FORMS THE SIDES OF THE UNITS AND A INSIDE BOX WHICH FORMS THE TROUGH, TOGETHER WITH TWO ANGLE IRON LIFTING HANDLES BY WHICH THE BOX IS REMOVED. THE TOP OF THE UNITS IS FORMED BY CASTING PLATFORM ITSELF.

CHARACTERISTICS OF WAFFLE SLABS

- WAFFLE SLABS ARE GENERALLY SUITABLE FOR FLAT AREAS.
- VOLUME OF CONCRETE USED IS VERY LESS COMPARED TO OTHERS.
- THE REINFORCEMENT IN THE WAFFLE SLAB IS PROVIDED IN THE FORM OF MESH OR INDIVIDUAL BARS.
- SEPARATE EXCAVATION FOR BEAMS IS NOT REQUIRED IN CASE OF WAFFLE SLAB.
- THE BOTTOM SURFACE OF SLAB IS LOOKS LIKE WAFFLE WHICH IS OBTAINED BY USING CARDBOARD PANELS OR PODS ETC.

- THE THICKNESS OF WAFFLE SLAB RECOMMENDED IS 85 TO 100 MM WHILE THE OVERALL DEPTH OF SLAB IS LIMITED TO 300 TO 600 MM.
- THE WIDTH OF BEAMS OR RIBS PROVIDED IN WAFFLE SLAB ARE GENERALLY 110 TO 200 MM.
- SPACING OF RIBS RECOMMENDED IS 600 TO 1500 MM.
- REINFORCED WAFFLE SLABS CAN BE CONSTRUCTED FOR THE SPAN UP TO 16 METERS WHILE BEYOND THAT LENGTH PREFABRICATED WAFFLE SLAB IS PREFERABLE.
- WAFFLE SLAB IS GOOD AGAINST SHRINKAGE AND IT IS LOWER THAN STIFFENED RAFTS AND FOOTING SLABS.
- WAFFLE SLAB REQUIRES ONLY 70% OF CONCRETE AND 80 % OF STEEL FROM THE CONCRETE AND STEEL USED FOR STIFFENED RAFT.
- TO CONSTRUCT A WAFFLE SLAB IN-SITU CONDITIONS, FORMWORK SHOULD BE NECESSARY TO SUPPORT THE SLAB. BUT SOME SPECIAL TOOLS ARE REQUIRED FOR THE FORM WORK IN CASE OF WAFFLE SLAB.
- PREFERRED IN CONSTRUCTION OF TWO-WAY SLABS OF LARGE SPAN (ABOVE 9 M).
- USE OF PRE-CAST ROOF ELEMENTS SAVES CONSTRUCTION TIME.
- ONLY FLAT SHUTTERING OR PROPPING IS NEEDED WHICH INCREASES THE PRODUCTIVITY THEREBY MAKING IT A COST-EFFECTIVE CONSTRUCTION TECHNIQUE FOR RC GRID SLAB.
- PRE- FABRICATION LEADS TO BETTER QUALITY CONTROL.
- THE SIZE OF COMPONENTS IS SUCH THAT THEY CAN EASILY BE HANDLED MANUALLY IF MECHANICAL HANDLING/ERECTION EQUIPMENT IS NOT AVAILABLE.
- CAN BE EASILY CAST AND ASSEMBLED BY SEMI- SKILLED LABOURS.

MATERIAL REQUIREMENTS *(PER UNIT)*

PRECAST R.C. WAFFLE UNIT SIZE 1200MM X1200 MM X450 MM DEEP	M20 CONCRETE- 0.018 CUM TMT STEEL- 4.5 KG

WAFFLE SLAB CONSTRUCTION PROCEDURE

- THE CONSTRUCTION OF WAFFLE SLABS CAN BE DONE BY
- THREE WAYS AS FOLLOWS.
- IN-SITU
- PRECAST
- PREFABRICATED
- IN-SITU WAFFLE SLABS ARE CONSTRUCTED BY POURING CONCRETE IN THE SITE OR FIELD WITH PROPER ARRANGEMENTS. IN CASE OF PRECAST WAFFLE SLAB, SLAB PANELS ARE CASTED SOMEWHERE AND THEY ARE JOINED TOGETHER WITH PROPER REINFORCEMENT AND CONCRETE IS FILLED.
- THE THIRD CASE, PREFABRICATED WAFFLE SLAB IS COSTLIEST THAN THE OTHER TWO METHODS. IN THIS CASE, REINFORCEMENT IS PROVIDED IN THE SLAB PANELS WHILE CASTING WITH SOME TENSION. HENCE, THEY DO NOT NEED INTERNAL REINFORCEMENT IN THE SITE.

FORMWORK TOOLS REQUIRED IN THE CONSTRUCTION OF WAFFLE SLAB ARE:

- WAFFLE PODS
- HORIZONTAL SUPPORTS
- VERTICAL SUPPORTS
- WALL CONNECTORS
- CUBE JUNCTIONS
- HOLE PLATES
- CLITS
- STEEL BARS

HORIZONTAL SUPPORT AND VERTICAL SUPPORTS ARE ARRANGED FIRST AND THEY ARE FIXED IN POSITION BY THE CONNECTORS AT THE EDGES. WALL CONNECTORS ARE USED TO PROVIDE CONNECTION BETWEEN WALL AND SLAB. THE HORIZONTAL BEAM SUPPORTS ARE CONNECTED BY SMALL BEAM CONNECTORS WHICH FORM SQUARE LIKE SHAPE IN WHICH PODS ARE GOING TO BE PLACED.

THE PODS ARE GENERALLY MADE OF PLASTIC AND THEY ARE AVAILABLE IN DIFFERENT SIZES AND DIFFERENT SHAPES. SIZE SELECTION OF POD DEPEND UPON THE REQUIREMENT AND SPAN LENGTH. FOR LONGER SPAN LARGE NUMBER OF PODS ARE REQUIRED. SAME SIZE SHOULD BE USED FOR ONE COMPLETE SLAB.

SIMILARLY BEAM CONNECTORS AND CUBE JUNCTIONS ARE ALSO AVAILABLE IN DIFFERENT SIZES BASED ON THE SUITABILITY OF POD SIZES. CUBE JUNCTIONS ARE USED TO FIX THE CORNERS OF PODS WITH THE FRAME WORK. AFTER FIXING THE FORMWORK, REINFORCEMENT IS PLACED IN THE TWO DIRECTIONS OF THE SLAB AND THEN CONCRETE IS POURED IN THE GAPS WHICH ARE CALLED AS RIBS AFTER HARDENING. THIN CONCRETE SLAB IS PROVIDED ON THE TOP AND AFTER ITS HARDENING PODS AND FRAMEWORKS ARE REMOVED FROM THE BOTTOM. THUS, THE WAFFLE LIKE SHAPE APPEARS AT THE BOTTOM SURFACE.

TOOLS AND EQUIPMENTS

A) STEEL/TIMBER MOULDS B) PLATE VIBRATOR C) LIGHT HOISTING EQUIPMENT D) MASON'S TOOLS E) CASTING PLATFORM D) PLAIN CENTERING AND SHUTTERING

ECONOMIC ASPECTS

1. THIS SCHEME IS 30% CHEAPER COMPARED TO RCC SLAB; SAVINGS IN CEMENT AND STEEL ARE 16% AND 12.5% RESPECTIVELY. ALSO, 16% SAVINGS IN AGGREGATES AND FORMWORK.

MODULAR CO-ORDINATION

DATE	SIGN	NAME:- ABHISHEK D MOHALKAR		ASSG NO.	STAMP
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		CLASS:- T.Y B.ARCH	ROLL NO.:-109	SCALE	
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BENEFITS OF WAFFLE SLAB CONSTRUCTION

- WAFFLE SLABS ARE USED FOR LARGER SPAN SLABS OR FLOORS AND USED WHEN THERE IS LIMITED REQUIREMENT FOR NUMBER OF COLUMNS.
- THE LOAD CARRYING CAPACITY OF WAFFLE SLAB IS GREATER THAN THE OTHER TYPES OF SLABS.
- THEY PROVIDE GOOD STRUCTURAL STABILITY ALONG WITH AESTHETIC APPEARANCE. HENCE, IT IS CONSTRUCTED FOR AIRPORTS, HOSPITALS, TEMPLES, CHURCHES ETC.
- THE WAFFLE SLAB CAN BE MADE OF CONCRETE OR WOOD OR STEEL AMONG THOSE CONCRETE WAFFLE SLAB IS PREFERRED FOR COMMERCIAL BUILDINGS AND OTHER TWO ARE PREFERRED FOR GARAGES, DECORATIVE HALLS ETC.
- IT HAS GOOD VIBRATION CONTROL CAPACITY BECAUSE OF TWO DIRECTIONAL REINFORCEMENT SO, IT IS USEFUL FOR PUBLIC BUILDINGS TO CONTROL VIBRATIONS CREATED BY MOVEMENTS OF CROWD.
- WAFFLE SLABS ARE LIGHTWEIGHT AND REQUIRES LESS AMOUNT OF CONCRETE, HENCE IT IS ECONOMICAL.
- CONSTRUCTION OF WAFFLE SLAB IS EASY AND QUICK WITH GOOD SUPERVISION.
- CONCRETE AND STEEL VOLUME REQUIRED IS SMALL, HENCE, LIGHT FRAMEWORK IS ENOUGH FOR WAFFLE SLAB.
- SEVERAL SERVICES LIKE LIGHTING, PLUMBING PIPES, ELECTRICAL WIRING, AIR CONDITIONING, INSULATION MATERIALS ETC. CAN BE [illegible] WITHIN THE [illegible] CALLED AS HOLEDECK.

DRAWBACKS OF WAFFLE SLAB

- FORMWORK TOOLS REQUIRED ARE VERY COSTLY BECAUSE OF LARGE QUANTITY REQUIREMENT OF PODS AND SOME SPECIAL TOOLS.
- THE FLOOR HEIGHT SHOULD BE MORE HENCE NUMBER OF FLOORS ARE REDUCED.
- THE SERVICES PROVIDED IN THE WAFFLE ARRANGEMENT WITHOUT PROPER MAINTENANCE MAY CAUSES DAMAGES TO THE SLAB.
- SKILLED WORKERS ARE REQUIRED DURING ITS CONSTRUCTION.
- THEY ARE NOT SUITABLE FOR SLOPED AREAS. IF THERE IS SLOPE AREA, THE AREA MUST BE LEVELED WITH FILLING OR BY EXCAVATING. FOR SOIL FILLING, GOOD SOIL SHOULD BE USED.
- THEY ARE NOT SUITABLE AGAINST HIGH WINDS OR CYCLONIC AREAS BECAUSE OF THEIR LIGHT WEIGHT.

SUSTAINABILITY ASPECTS

1. PRECAST WAFFLE SLAB HAS LOWER CARBON FOOT-PRINT AND LOWER EMBODIED ENERGY AS COMPARED TO CONVENTIONAL RCC SLAB.

LIMITATIONS

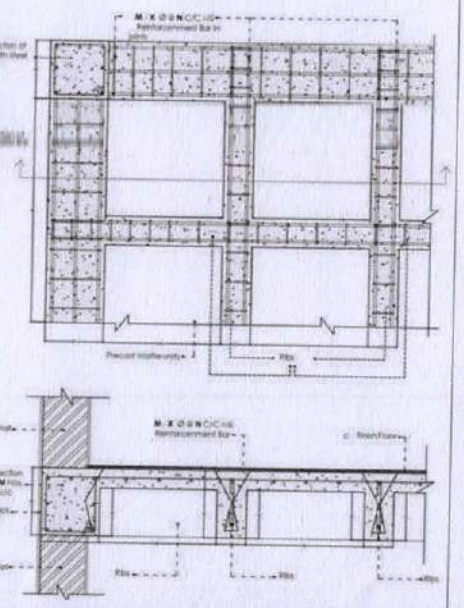
1. SUITABLE FOR LARGE SPAN 2 WAY GRID SLABS. NOT ECONOMICAL FOR SMALL HOUSES WITH SMALL SPANS.

MARKET LINKAGES

THE PRECAST COMPONENTS CAN BE CAST AT CONSTRUCTION SITE. THE COMPONENTS CAN ALSO BE PRODUCED BY SMALL ENTREPRENEURS AND SUPPLIED TO CONSUMERS AT STATE/ BLOCK/VILLAGE LEVEL.

COST

1. APPROX. 20-30% SAVINGS OVER RC GRID SLAB ROOF/FLOOR.



REINFORCEMENT DETAILING AND ARRANGEMENT OF PRECAST RC WAFFLE UNIT IN SECTION

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		SUBJECT:- B.C.M-VI			
		CLASS:- T.Y B.ARCH	ROLL NO.:-109	SCALE	
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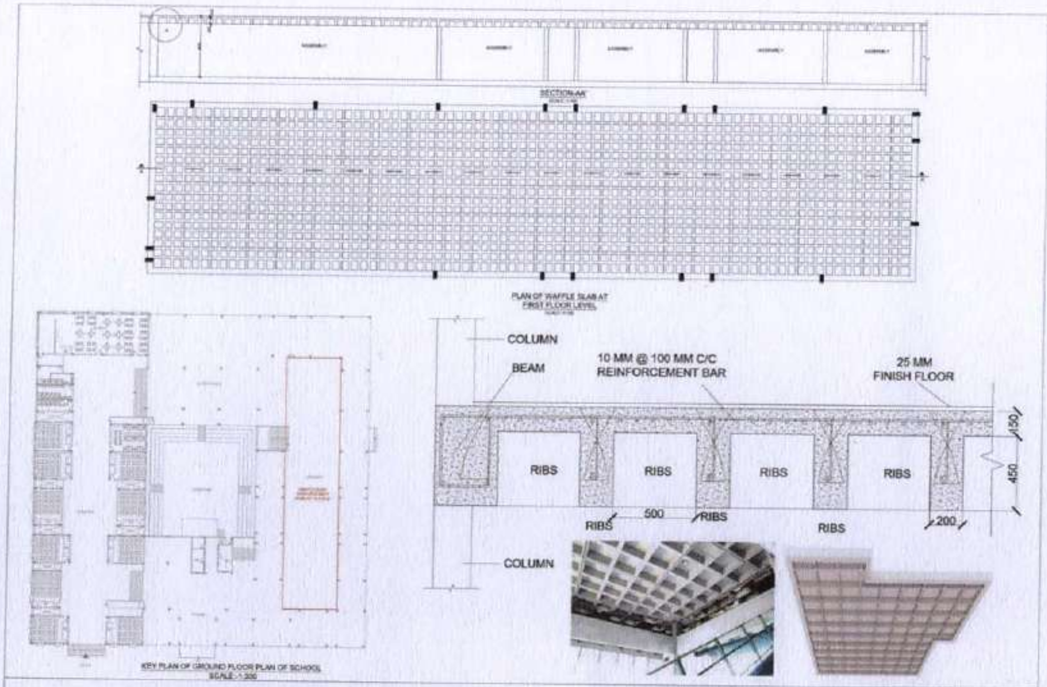

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		SUBJECT:- B.C.M-VI			
		CLASS:- T.Y. B. ARCH	ROLL NO:-109	SCALE	
		YEAR - 2021-22	TERM - VI		

WHAT IS EARTHQUAKE ?

- EARTHQUAKE IS A NATURAL PHENOMENON OCCURRING WITH ALL UNCERTAINTIES
- DURING THE EARTHQUAKE, GROUND MOTIONS OCCUR IN A RANDOM FASHION, BOTH HORIZONTALLY AND VERTICALLY, IN ALL DIRECTIONS RADIATING FROM EPICENTER
- THESE CAUSE STRUCTURES TO VIBRATE AND INDUCE INERTIA FORCES ON THEM
- **PRINCIPLE OF EARTHQUAKERESISTANT DESIGN**
  THE BUILDING SHALL WITHSTAND WITH ALMOST NO DAMAGE TO [illegible] OCCURRING SEVERAL TIMES DURING LIFE OF A BUILDING.
- THE BUILDING SHALL NOT COLLAPSE OR HARM HUMAN LIVES DURING SEVERE EARTHQUAKE MOTIONS, WHICH HAVE A PROBABILITY OF OCCURRING LESS THAN ONCE DURING THE LIFE OF THE BUILDING.
- **RULES FOR BUILDING DESIGN**
- THE CONFIGURATION OF THE BUILDING (PLAN AND ELEVATION) SHOULD BE AS SIMPLE AS POSSIBLE. THE FORMATION SHOULD GENERALLY BE BASED ON HARD AND UNIFORM GROUND.
- THE MEMBERS RESISTING HORIZONTAL FORCES SHOULD BE ARRANGED SO THAT TORSIONAL DEFORMATION IS NOT PRODUCED.
- THE STRUCTURE OF THE BUILDING SHOULD BE DYNAMICALLY SIMPLE AND DEFINITE.
- THE FRAME OF THE BUILDING STRUCTURE SHOULD HAVE ADEQUATE DUCTILITY IN ADDITION TO REQUIRED STRENGTH.

ARCHITECTURAL FEATURES AFFECT SEISMIC RESISTANCE OF STRUCTURES.

1. SIZE OF BUILDINGS
2. HORIZONTAL LAYOUT OF BUILDINGS
3. VERTICAL LAYOUT OF BUILDINGS
4. ADJACENCY OF BUILDINGS

1. SIZE OF BUILDINGS

IN TALL BUILDINGS WITH LARGE HEIGHT-TO-BASE SIZE RATIO (AS SHOWN IN FIG.1.A), THE HORIZONTAL MOVEMENT OF THE FLOORS DURING GROUND SHAKING IS LARGE WHICH DETRIMENTALLY AFFECT THE STABILITY OF A STRUCTURE. AND IT INCREASES OVERTURN TENDENCY. WITH REGARD TO SHORT BUT VERY LONG BUILDINGS (AS IN FIG.1.B), THE DAMAGING EFFECTS DURING EARTHQUAKE SHAKING ARE MANY. ADDITIONALLY, IN BUILDINGS WITH LARGE PLAN AREA LIKE WAREHOUSES (FIG.1.C), THE HORIZONTAL SEISMIC FORCES CAN BE EXCESSIVE TO BE CARRIED BY COLUMNS AND WALLS. SO, THE AFOREMENTIONED SIZES OF BUILDINGS ARE HIGHLY LIKELY TO SHOW POOR PERFORMANCE DURING EARTHQUAKES.

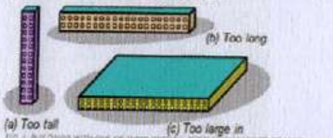

FIG. 1: BUILDINGS WITH ONE OF THEIR OVERALL SIZES MUCH LARGER OR MUCH SMALLER THAN THE OTHER TWO, DO NOT PERFORM WELL DURING EARTHQUAKES

2. HORIZONTAL LAYOUT OF BUILDINGS

IN GENERAL, BUILDINGS WITH SIMPLE GEOMETRY IN PLAN (FIG.3.A) HAVE PERFORMED WELL DURING STRONG EARTHQUAKES. BUILDINGS WITH RE-ENTRANT CORNERS, LIKE THOSE U, V, H AND + SHAPED IN PLAN (AS ILLUSTRATED IN FIG.3.B), HAVE SUSTAINED SIGNIFICANT DAMAGE. FREQUENTLY, THE BAD EFFECTS OF INTERIOR CORNERS IN THE PLAN OF BUILDINGS CAN BE AVOIDED BY MAKING THE BUILDINGS IN TWO PARTS. FOR INSTANCE, AN L-SHAPED PLAN CAN BE BROKEN UP INTO TWO RECTANGULAR PLAN SHAPES USING A SEPARATION JOINT AT THE JUNCTION (FIG.3.C). SOMETIMES, SIMPLE PLAN CANNOT BE USED AS THE ONLY STRATEGY FOR IMPROVING PERFORMANCE OF BUILDINGS DURING EARTHQUAKE, BUT OTHER FACTORS WOULD PLAY THEIR ROLE AS WELL. FOR EXAMPLE, SIMPLE PLAN STRUCTURES WITH UNEQUAL DISTRIBUTION OF [illegible] EARTHQUAKES. BUILDINGS WITH SUCH FEATURES TEND TO TWIST DURING EARTHQUAKE SHAKING. THAT IS WHY BOTH ARCHITECTURAL AND STRUCTURAL ENGINEER NEED TO COOPERATE TO DESIGN HIGH SEISMIC RESISTANCE STRUCTURE.

FIG. 3: SIMPLE PLAN SHAPE BUILDINGS DO WELL DURING EARTHQUAKES

3. VERTICAL LAYOUT OF BUILDINGS

THE EARTHQUAKE FORCES [illegible] AT DIFFERENT FLOOR LEVELS IN A BUILDING NEED TO BE [illegible] ALONG THE HEIGHT TO THE GROUND BY THE SHORTEST PATH. ANY DEVIATION OR DISCONTINUITY IN THE LOAD TRANSFER PATH LEAD TO POOR SEISMIC PERFORMANCE OF THE BUILDING. THERE ARE SEVERAL VERTICAL ARCHITECTURAL AND STRUCTURAL FEATURES THAT DECLINE SEISMIC CAPACITY OF BUILDINGS.

VERTICAL SETBACKS

BUILDINGS WITH VERTICAL SETBACKS SUCH AS HOTEL BUILDINGS WITH A FEW STORYS WIDER THAN THE REST CAUSE A SUDDEN JUMP IN EARTHQUAKE FORCES AT THE LEVEL OF DISCONTINUITY, AS ILLUSTRATED IN FIG.4.

FIG. 4: BUILDINGS WITH VERTICAL SETBACK

WEAK OR FLEXIBLE STORY

BUILDINGS THAT HAVE FEWER COLUMNS OR WALLS IN A PARTICULAR STORY OR WITH UNUSUALLY TALL STORY AS SHOWN IN FIG.5, TEND TO DAMAGE OR COLLAPSE WHICH IS INITIATED IN THAT STORY.

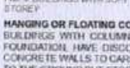

FIG. 4: BUILDINGS WITH SOFT STOREY

UNEQUAL COLUMN HEIGHT ALONG SLOPES

BUILDINGS ON SLOPPY GROUND HAVE UNEQUAL HEIGHT COLUMNS ALONG THE SLOPE, WHICH CAUSES ILL EFFECTS LIKE TWISTING AND DAMAGE IN SHORTER COLUMNS AS CAN BE NOTICED IN FIG.6.

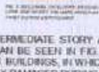

Fig. 7: Buildings with Hanging or Floating Columns

HANGING OR FLOATING COLUMNS

BUILDINGS WITH COLUMNS THAT HANG OR FLOAT ON BEAMS AT AN INTERMEDIATE STORY AND DO NOT GO ALL THE WAY TO THE FOUNDATION, HAVE DISCONTINUITIES IN THE LOAD TRANSFER PATH AS CAN BE SEEN IN FIG. 7. SOME BUILDINGS HAVE REINFORCED CONCRETE WALLS TO CARRY THE EARTHQUAKE LOADS TO THE FOUNDATION. BUILDINGS, IN WHICH THESE WALLS DO NOT GO ALL THE WAY TO THE GROUND BUT STOP AT AN UPPER LEVEL, ARE LIABLE TO GET SEVERELY DAMAGED DURING EARTHQUAKES.

ROLE OF HORIZONTAL BANDS

- PLINTH BAND: THIS SHOULD BE PROVIDED IN THOSE CASES WHERE THE SOIL IS SOFT OR UNEVEN IN THEIR PROPERTIES, AS IT USUALLY HAPPENS IN HILLY AREAS. THIS BAND IS NOT TOO CRITICAL.
- LINTEL BAND: THIS IS THE MOST IMPORTANT BAND AND COVERS ALL DOOR AND WINDOW LINTEL.
- ROOF BAND: IN BUILDINGS WITH FLAT REINFORCED CONCRETE OR REINFORCED BRICK ROOFS, THE ROOF BAND IS NOT REQUIRED BECAUSE THE ROOF SLAB ITSELF PLAYS THE ROLE OF A BAND. HOWEVER, IN BUILDINGS WITH FLAT TIMBER OR CGI SHEET ROOF, A ROOF BAND NEEDS TO BE PROVIDED. IN BUILDINGS WITH PITCHED OR SLOPED ROOF, THE ROOF BAND IS VERY IMPORTANT.
- GABLE BAND: IT IS EMPLOYED ONLY IN BUILDINGS WITH PITCHED OR SLOPED ROOFS.

HORIZONTAL AND VERTICAL SHAKING

EARHQUAKE RESISTANT FRAME STRUCTURE

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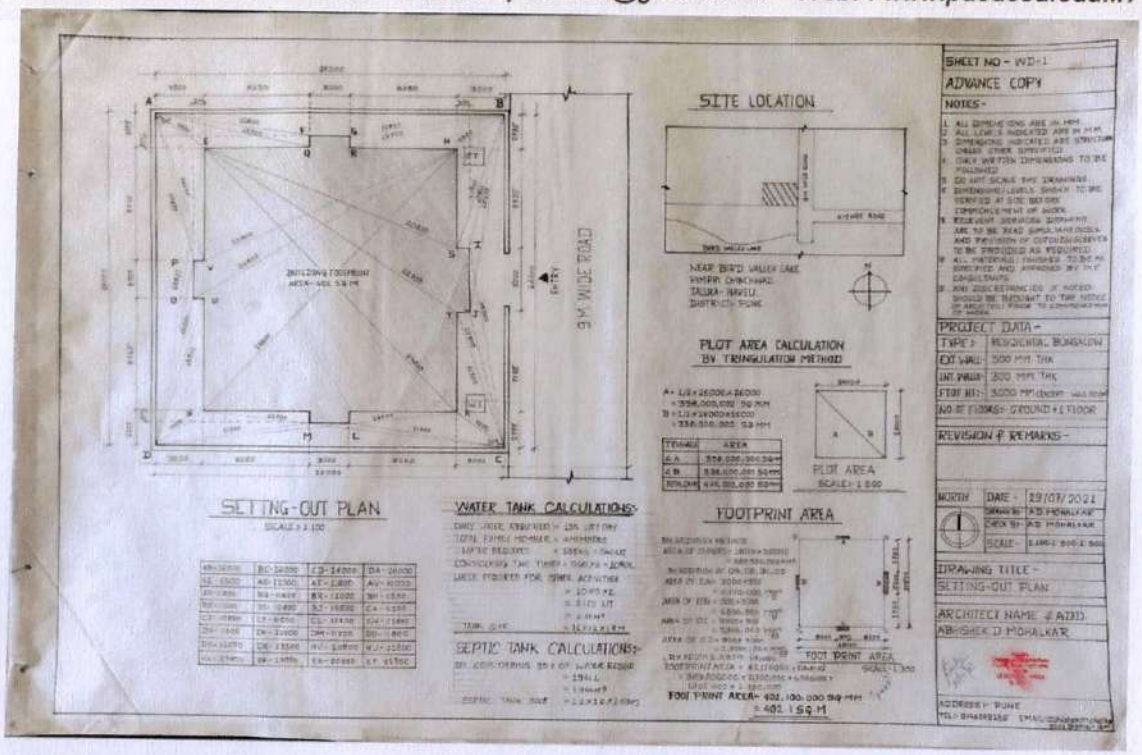

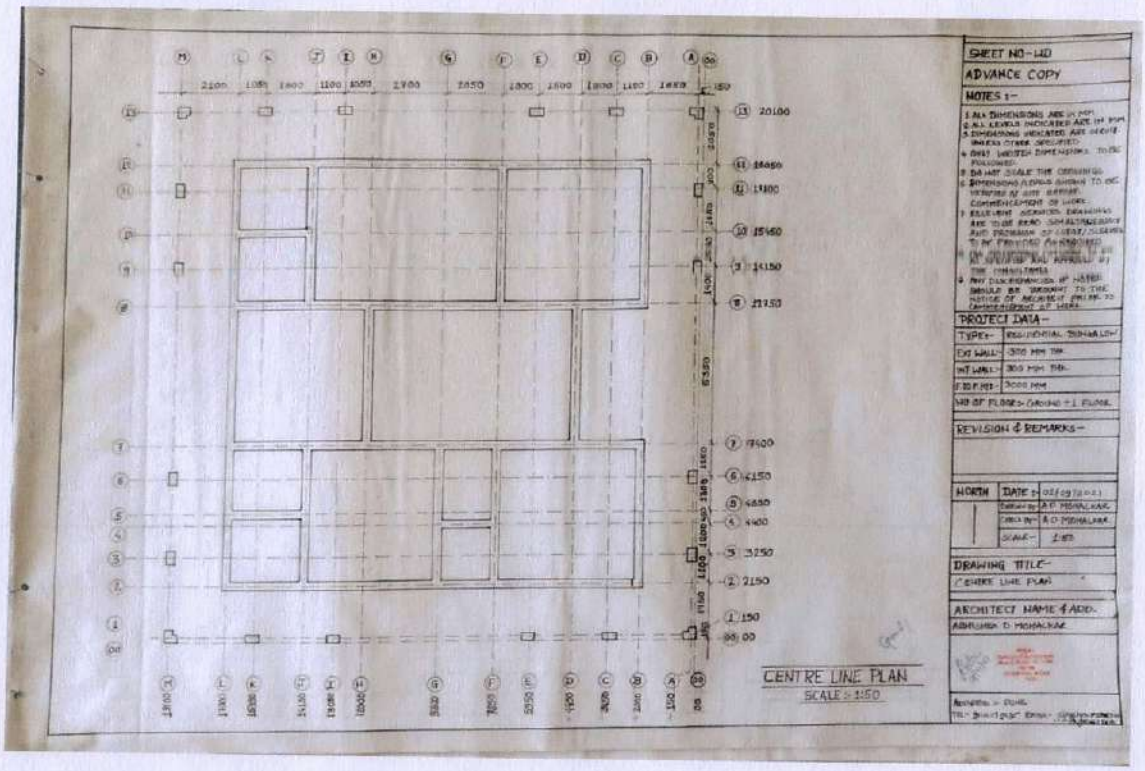

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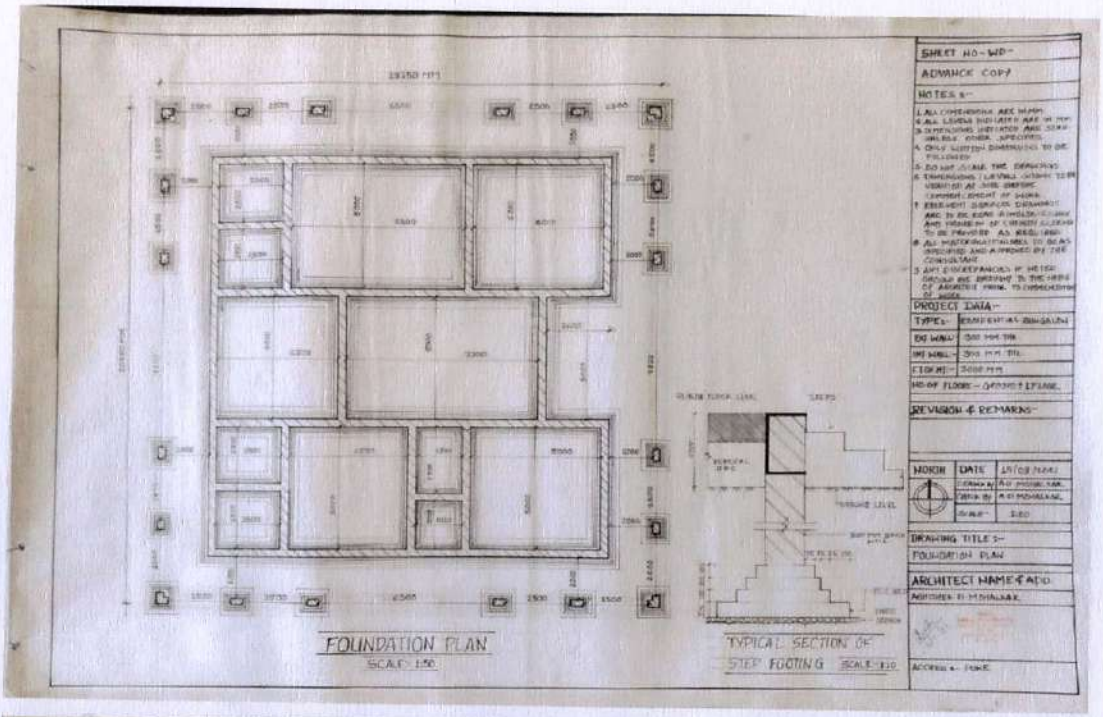

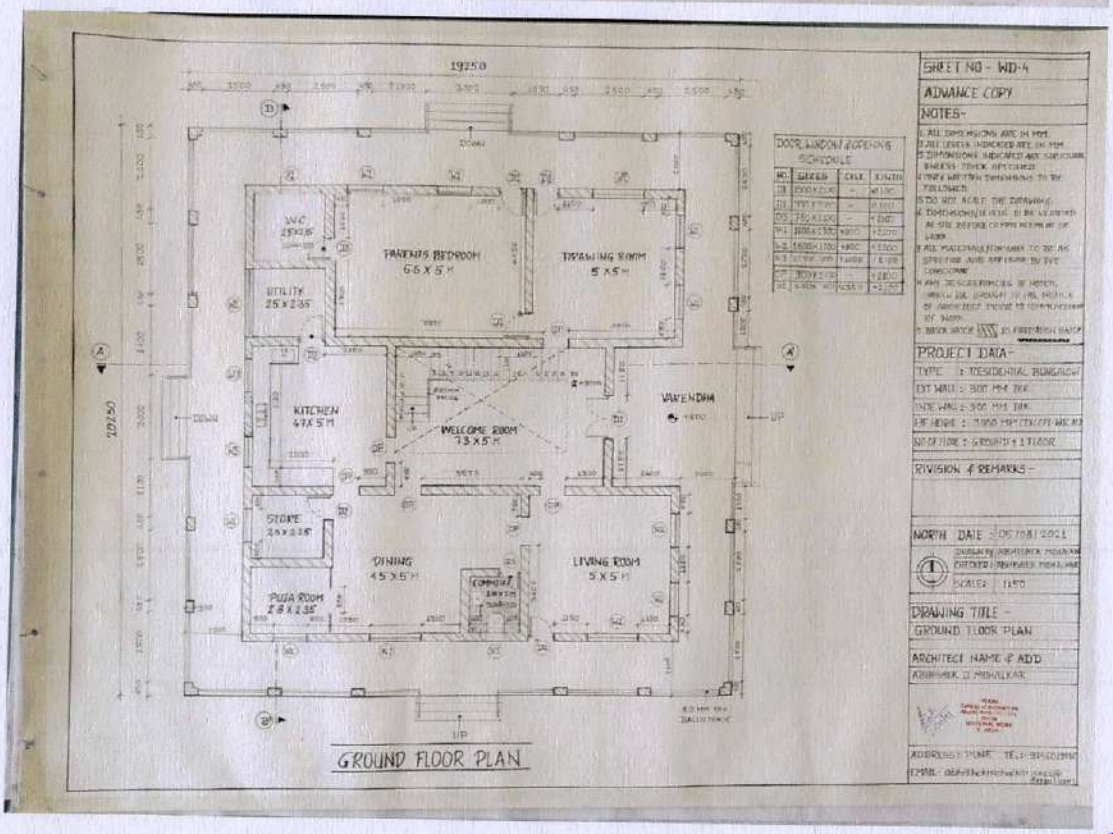

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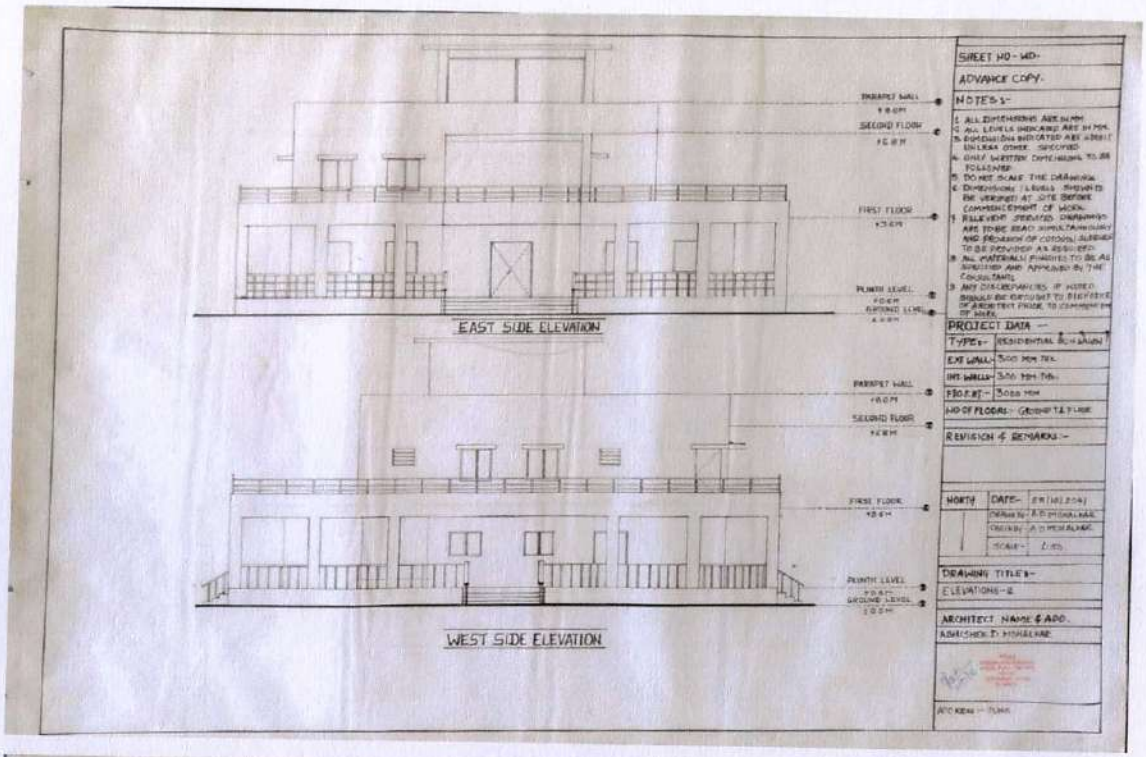

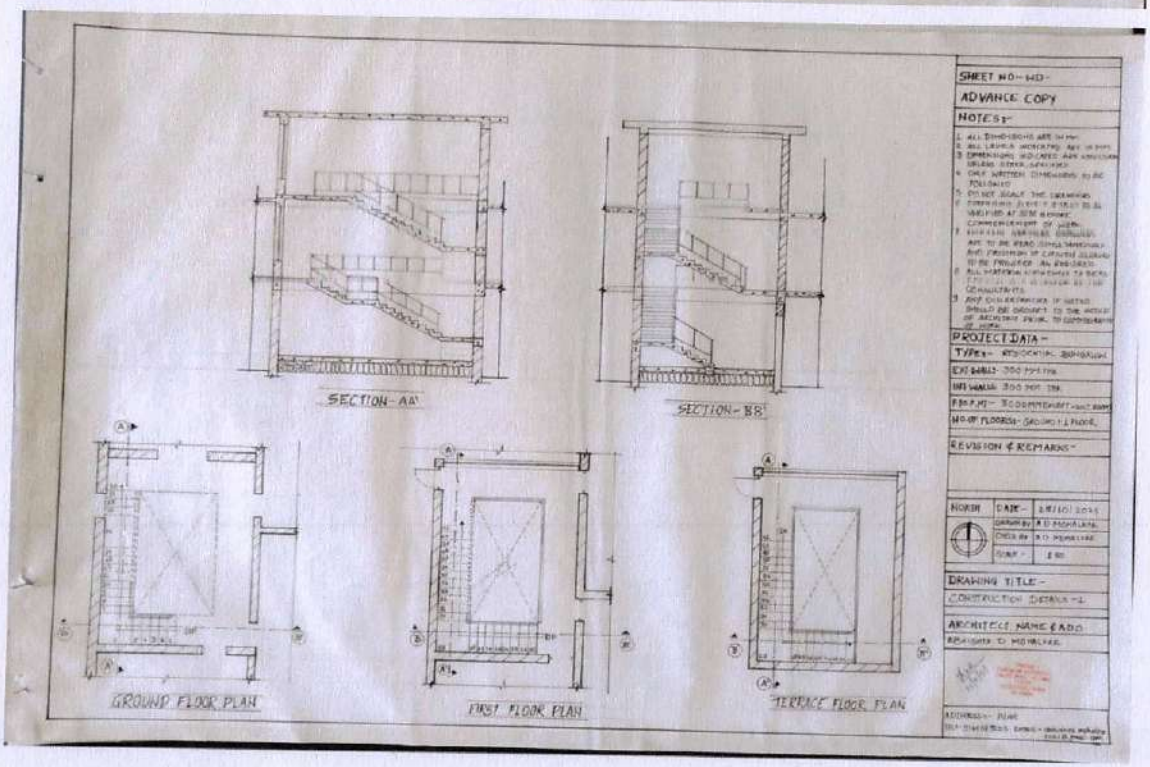

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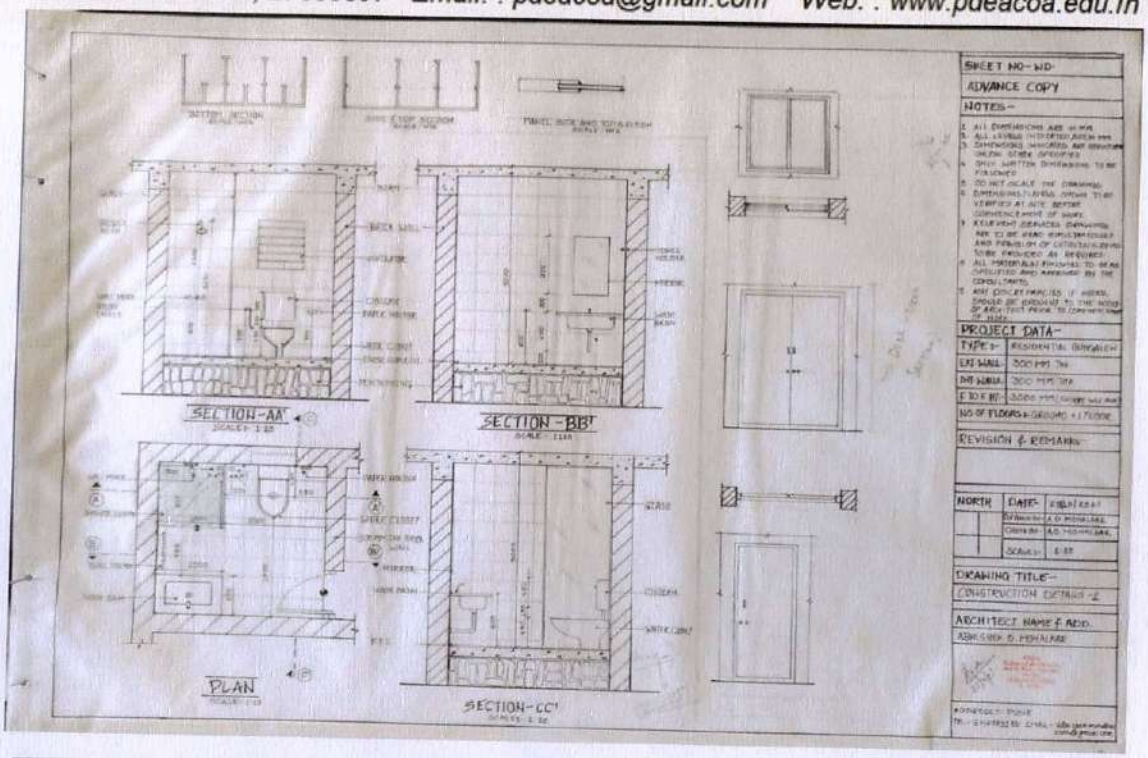

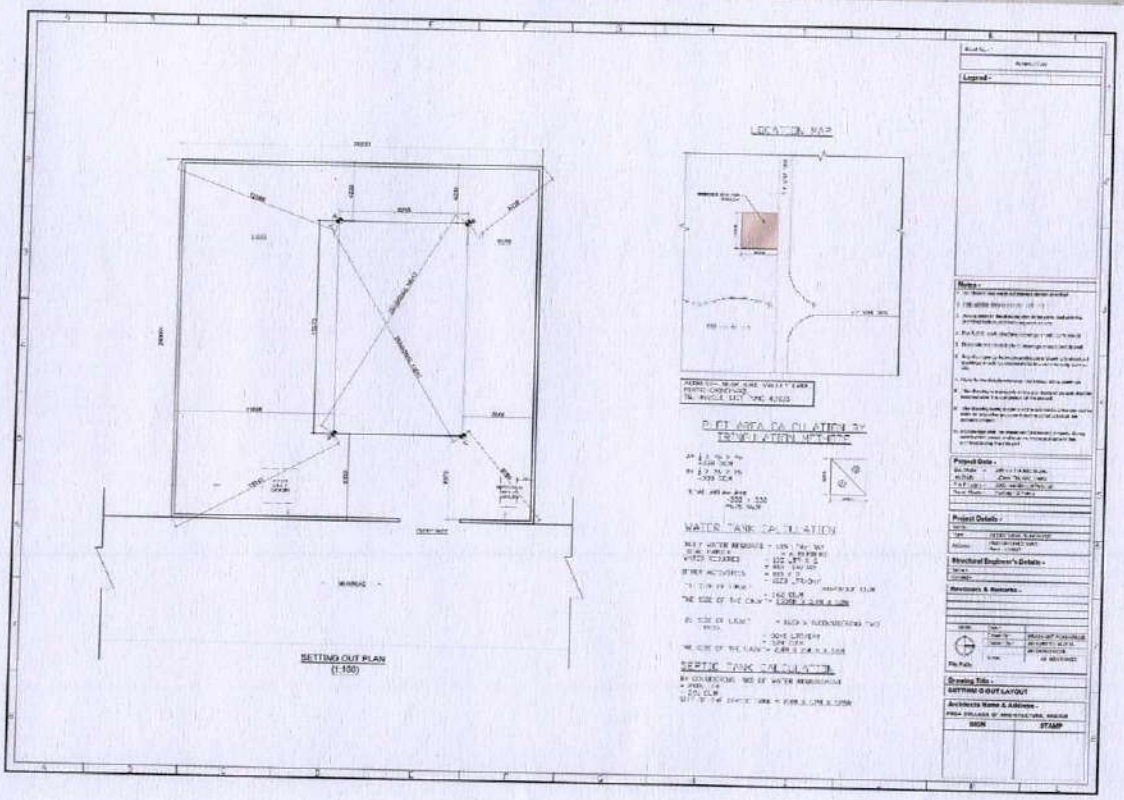

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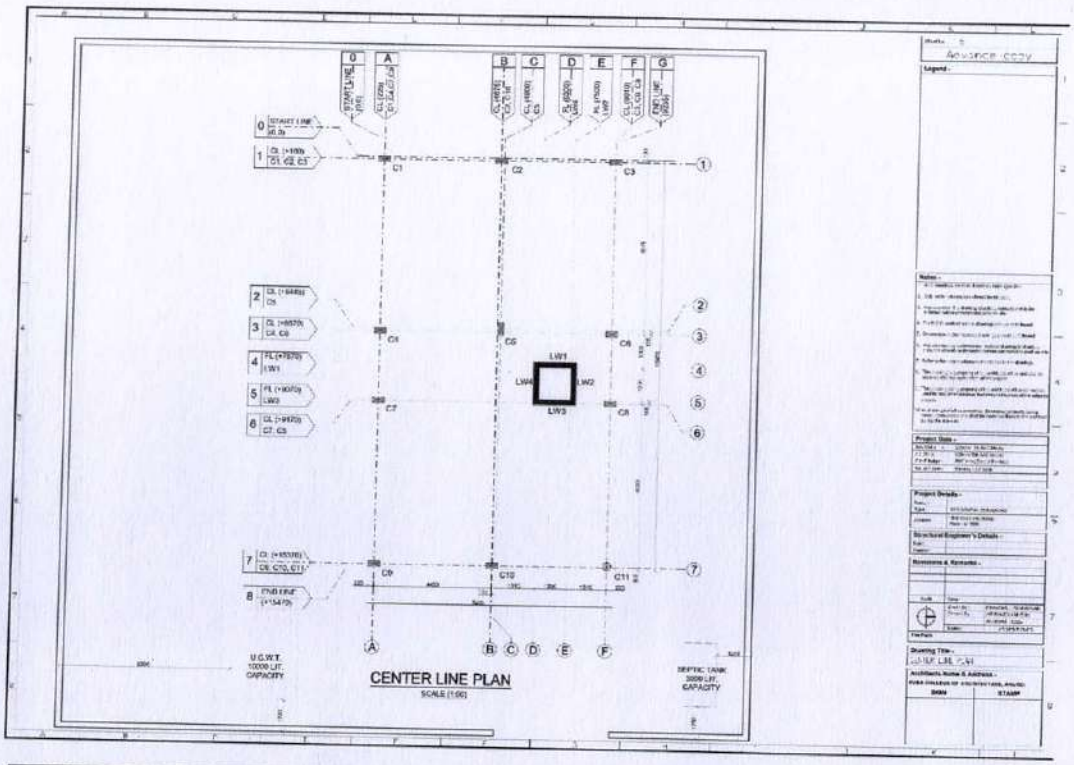

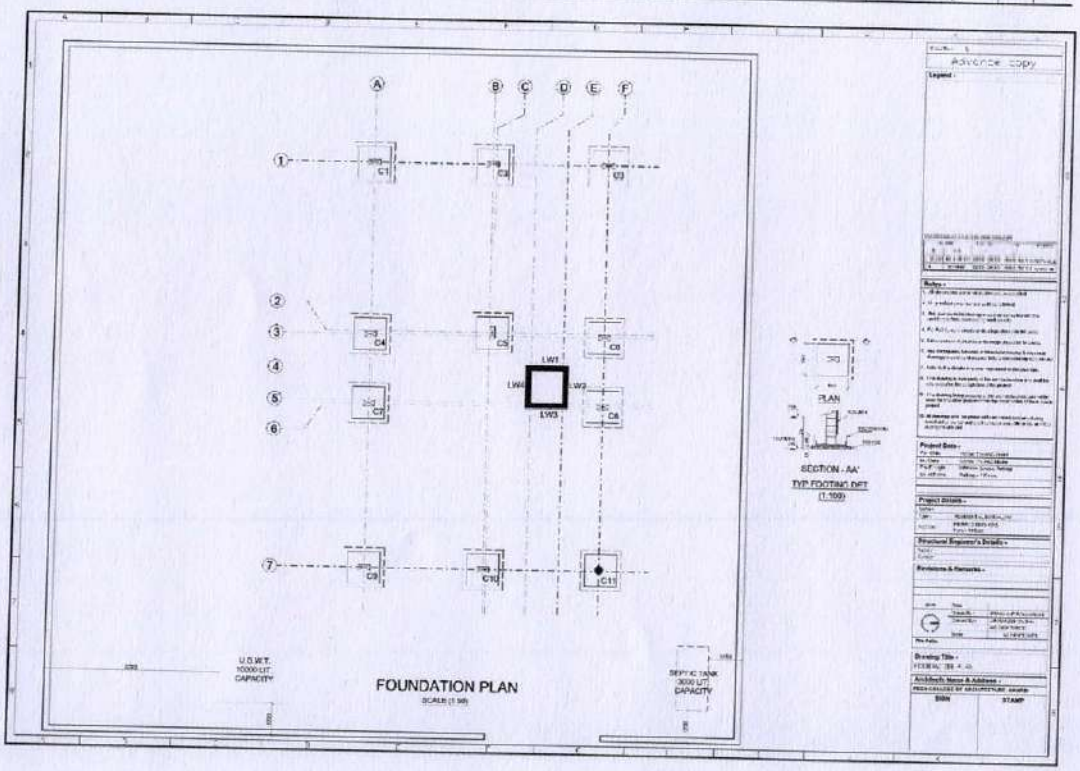

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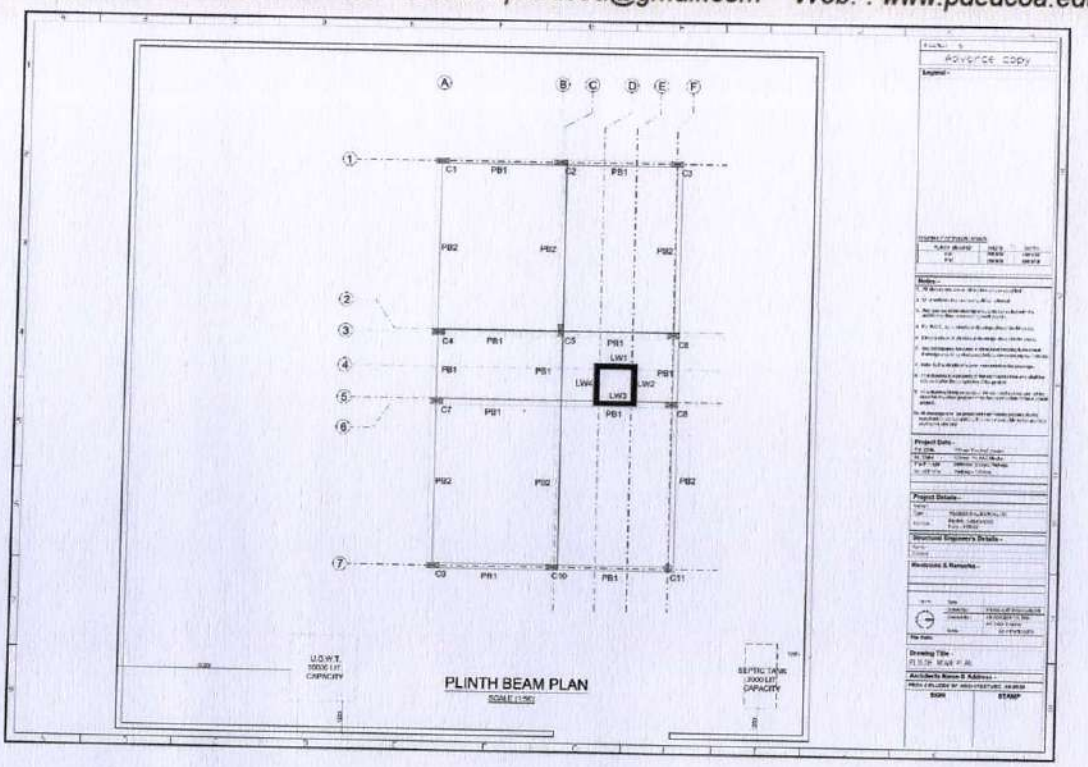

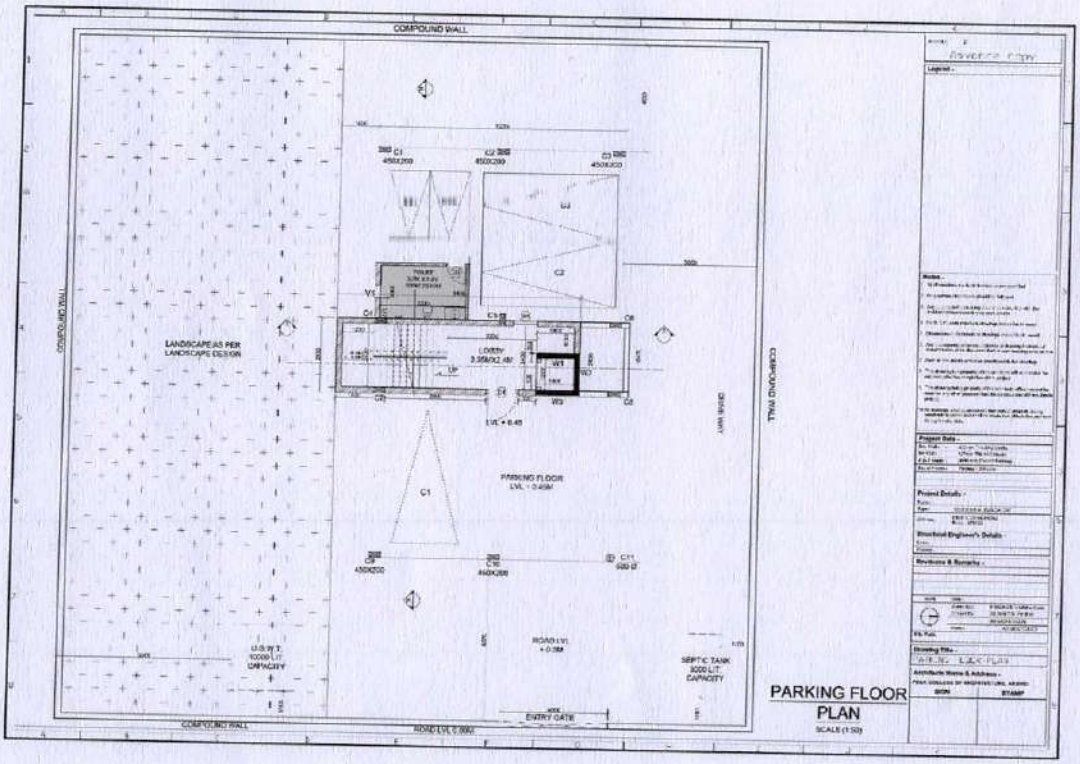

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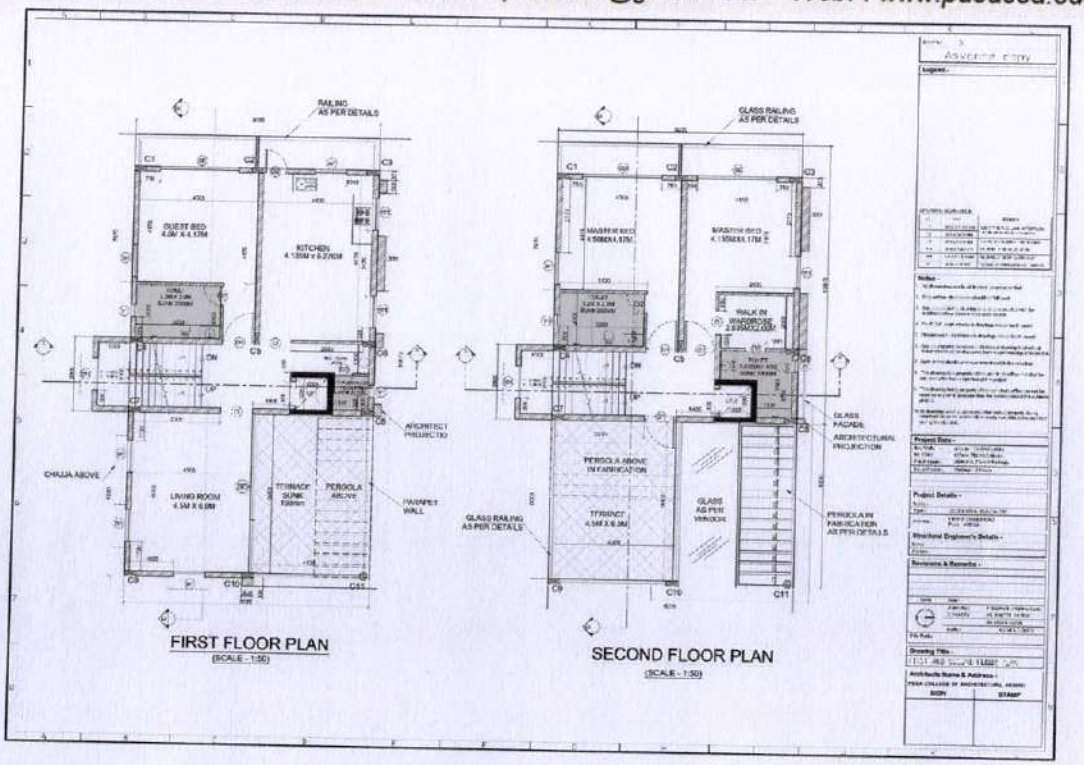

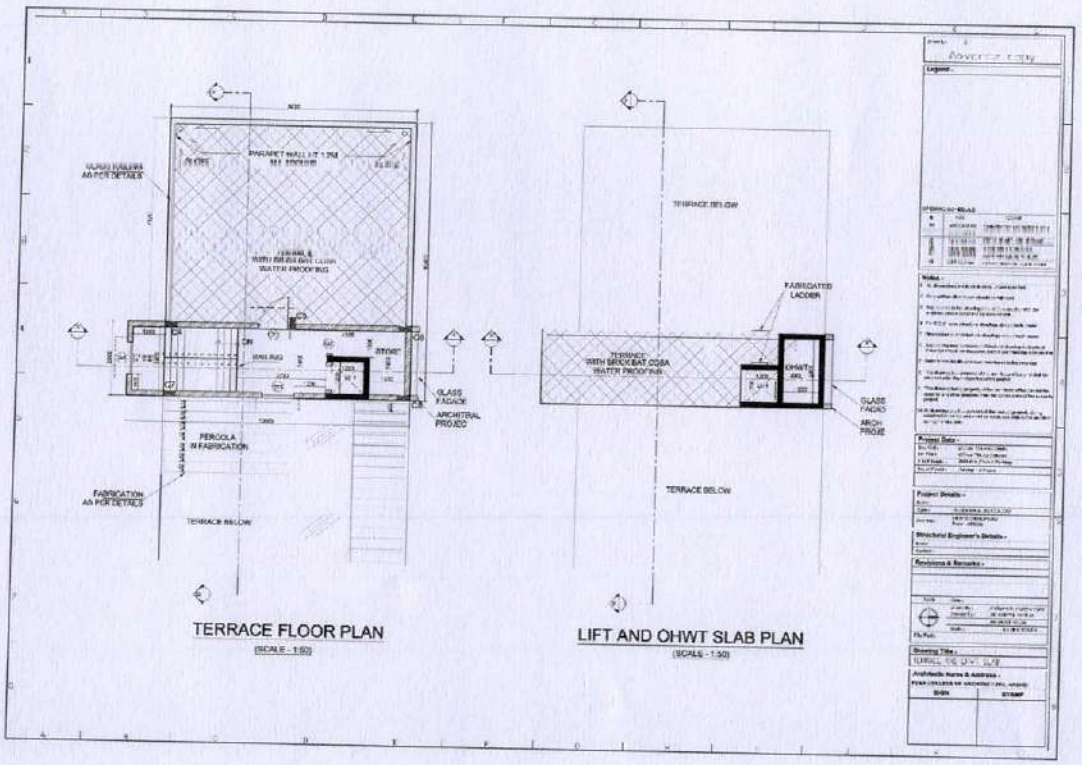

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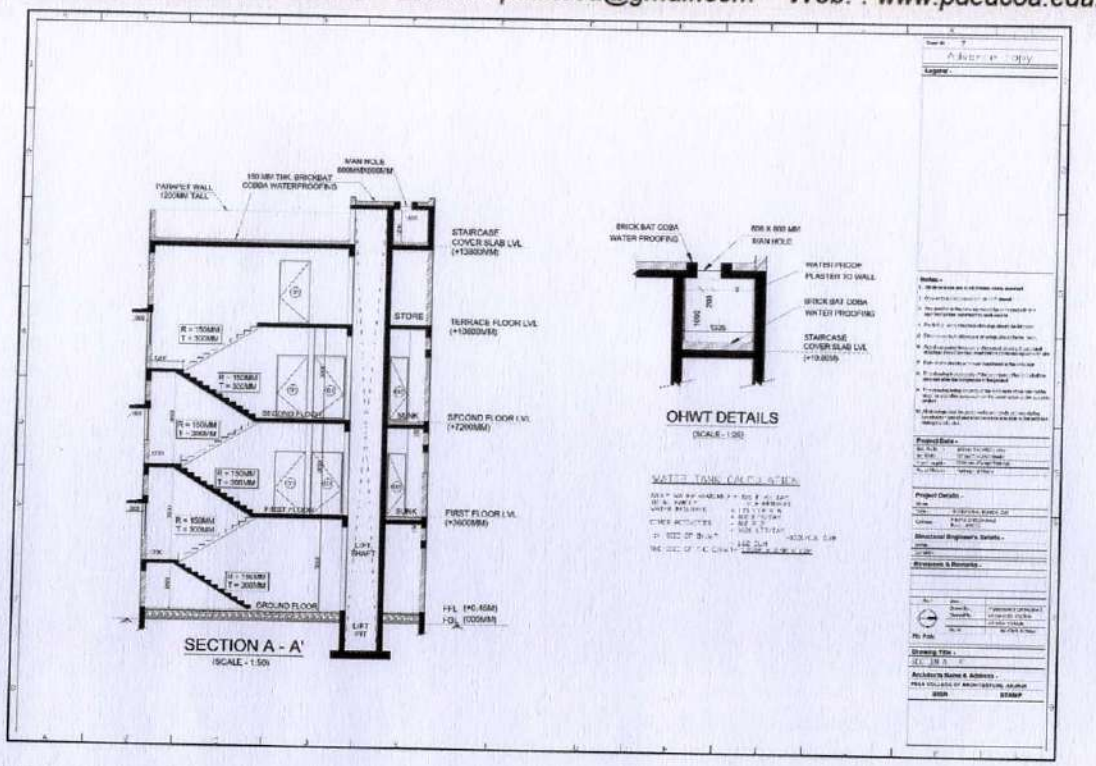

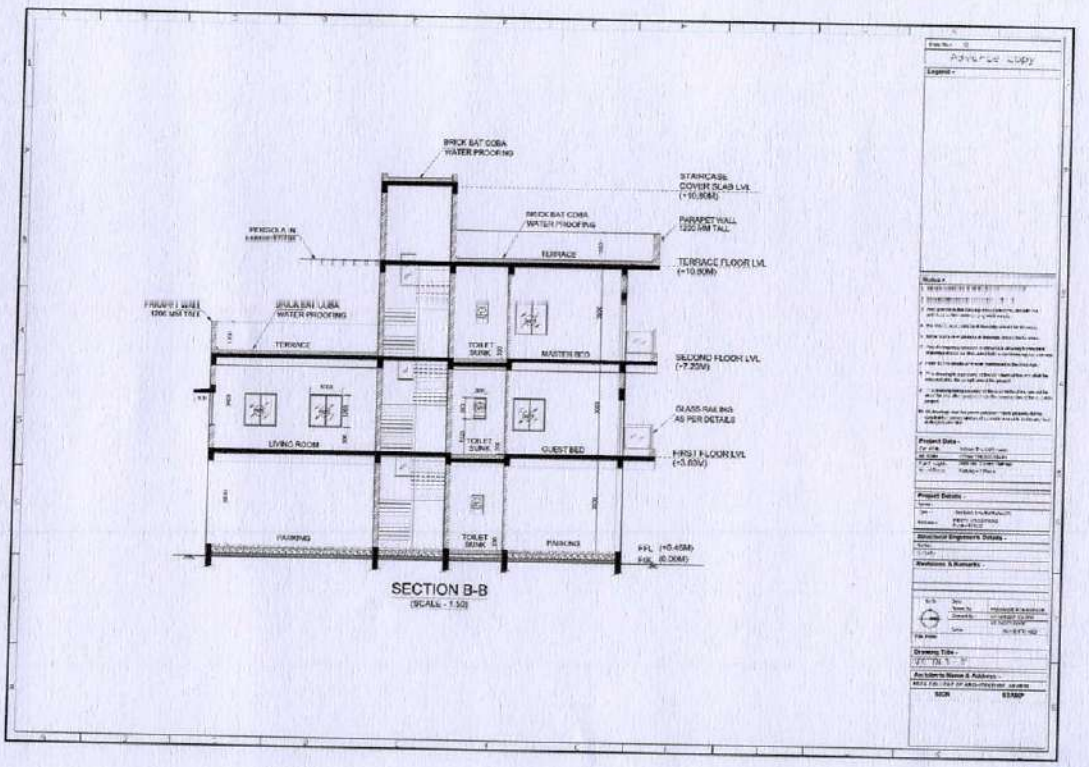

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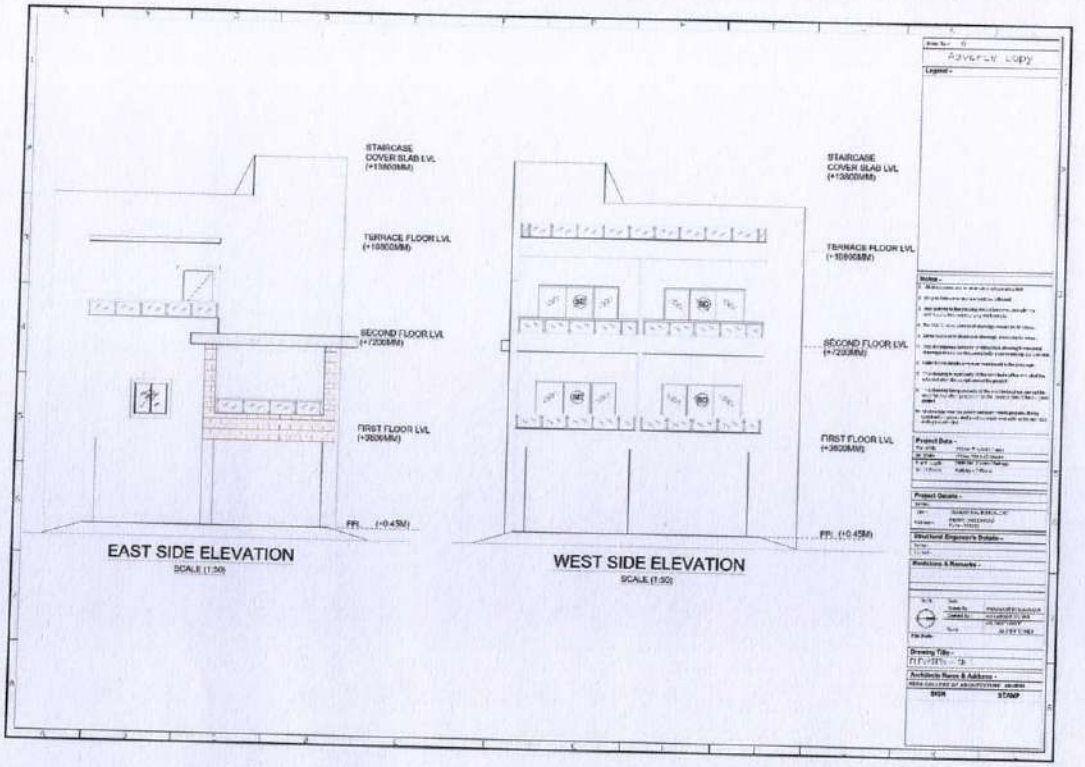

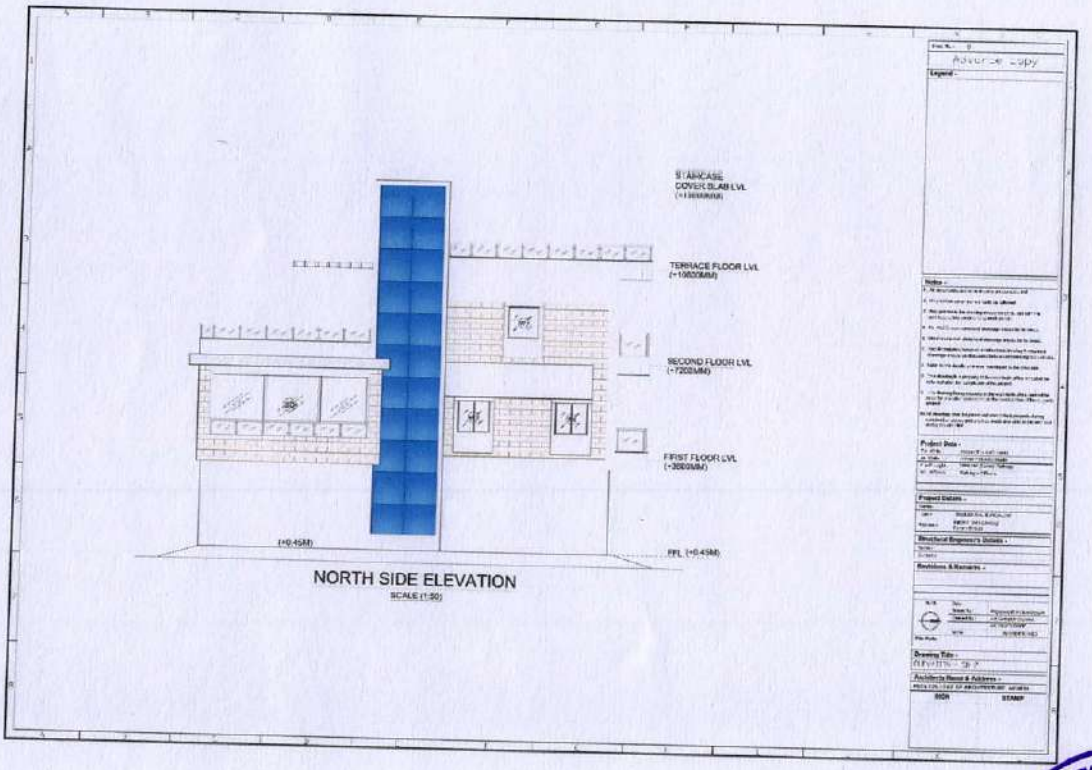

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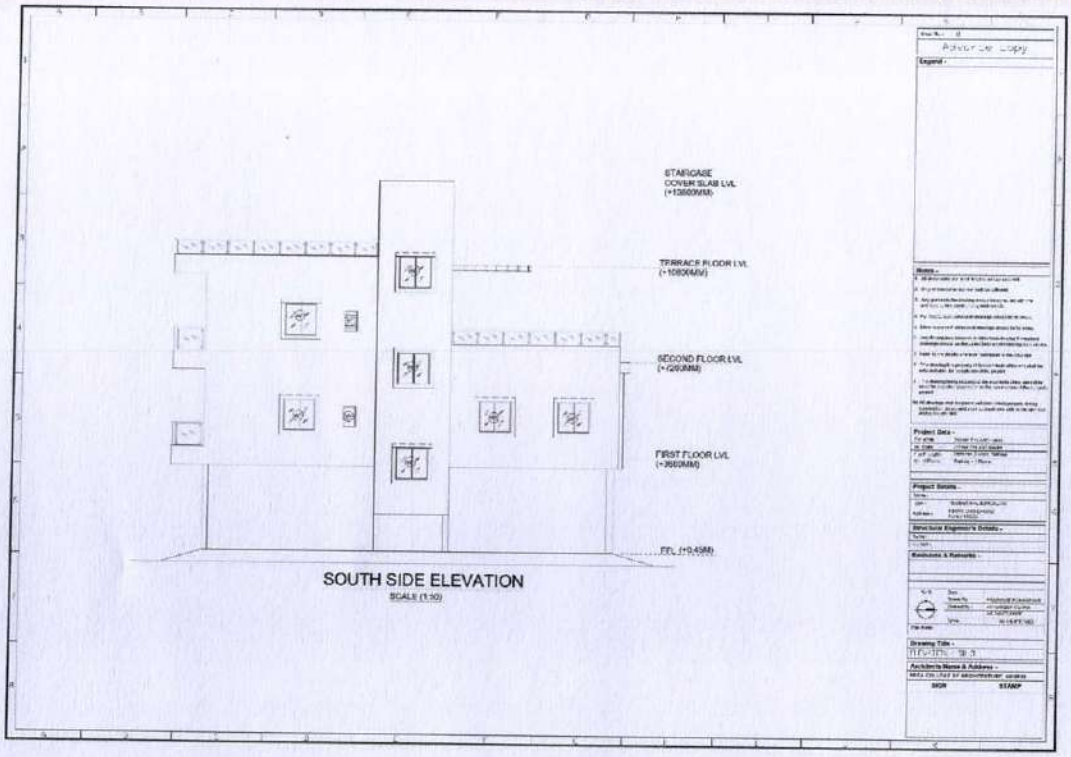

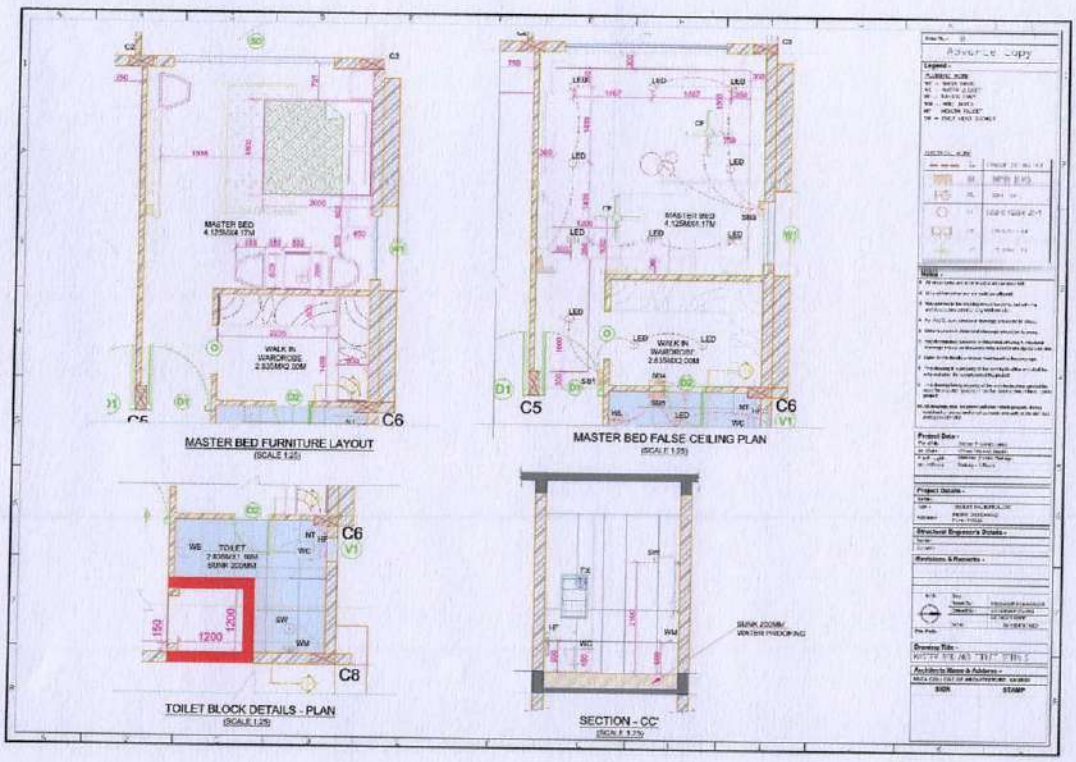

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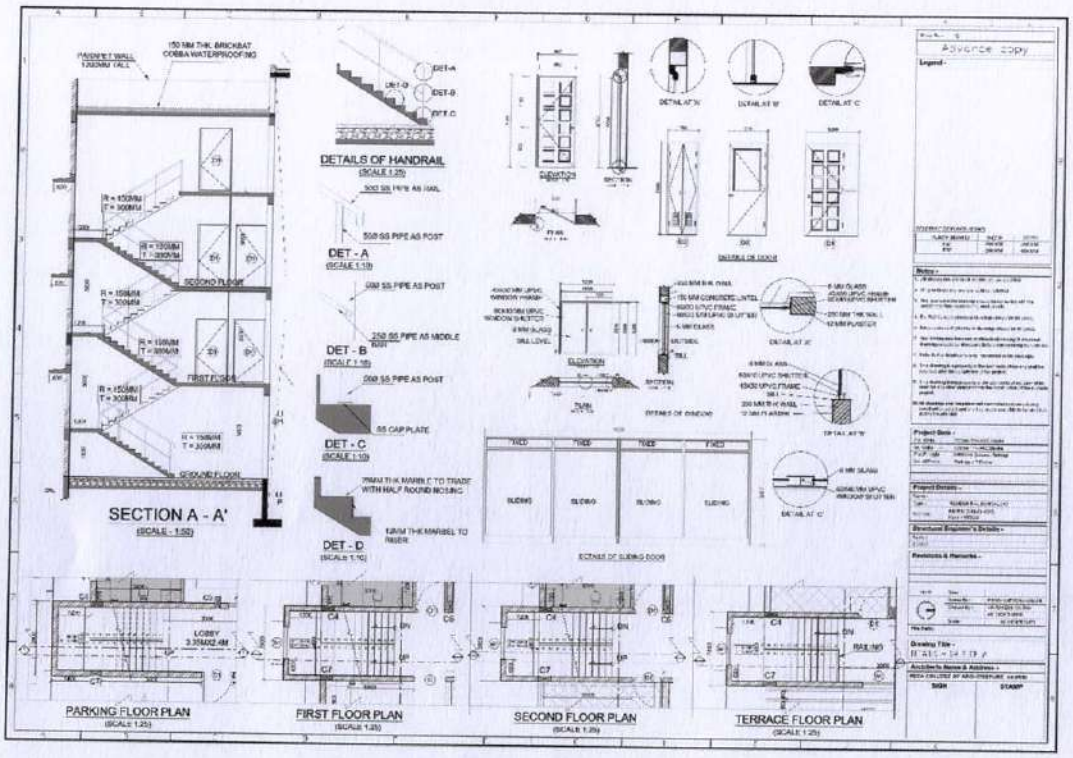

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PROBLEM SOLVING

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Students undergo various settlement study

Settlement study as a concept, not only helps us understand evolutionary trends in architecture, society and culture of a place.
The main aim & objectives is to to assess and evaluate the overall development of the village/Town or city & to understand the pattern of living.

- History of the settlement
- Demography/Population
- Literacy Rate
- Cultural Aspects
- Flora fauna
- Mapping of the village
- Landuse
- Road patterns (Primary,Secondary & Tertiary)
- Electrical Services
- Sanitation (the provision of clean drinking water and adequate sewage disposal)
- Type of structures
- Detailing of the structures
- Material study
- Available amenities

After studying various aspects students derive the inferences or interpretations.
Students identify problems or requirements.
Based on the inferences students identify the site and propose the design problem as per requirements and design.

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WHAT IS SETTLEMENT

A Settlement is a place where people live and interact through activities such as agriculture, trading and entertainment. Settlement in geography help us to understand man's relationship with his environment. Settlement is often correlation between functions, population sizes and population density.

FACTORS AFFECTING:-

Soils
Fertility of soils also another considerations for agricultural activities.

Relief
The availability of broad flat land such as floodplains provide agricultural activities.

Defence
Threat from enemies and predatory animals drove people to live together for protection.

Shelter
"Shelters" which are sheltered from natural elements. Windswept highland with harsh cold climate are unsuitable for settlement.

Water Supply
Water is essential for human survival and agricultural activities.

AIM :- The study, understand and analyse the settlement in western ghats and the factors affecting the settlement.

OBJECTIVES :-

1) To understand the important aspects such as shape and pattern of a settlement dispersion.
2) To study the distinctive types in which a rural settlement is usually classified.
3) To study the type of load bearing structures
4) To make a suitable plan and strategy for sustainable development of settlement of study village.
5) To understand and study the settlement pattern of the study region and to identify the geographical and climatic factors affecting settlement.

KOLHAPUR

Kolhapur is a city on the banks of panchaganga river, in the west indian State of maharashtra. It's known for its temples, like the ancient Mahalaxmi temple, a hindu pilgrimage.
According to legend, One rishi bhrigu kicked vishnu on chest. This act of apology angered lakshmi. So, she settled in anger at ... [illegible] ... of pipliha. As mahalakshmi killed kolhapur, the demon requested to named the village after his name, so the city is named as kolhapur.

AMBA GAON

Amba is a village in [illegible] in kolhapur district of maharashtra state, India. It belongs to paschim maharashtra.

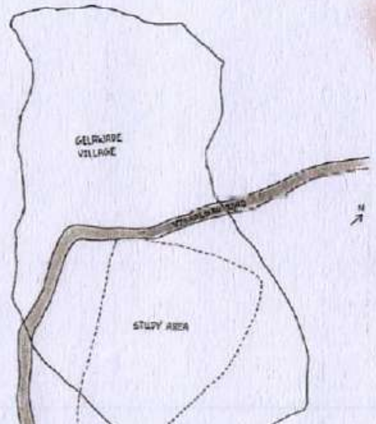
AMBA GHAT

The Amba Ghat hugs the sahyadri mountain ranges at a height of 2000ft. above sea level. This mountain pass acted as a connecting link from kolhapur to the konkan region.

Mythological history of amba says - In the era of mahabharata, the daughter of king kashi called 'Amba' had to take revenge of ganga putra 'Bhisma'. To defeat him, she worship lord shiva for many years in the ghat, so the ghat is called 'Amba Ghat'.

PAWANKHIND

Pawankhind is the symbol of great maratha war and strength. Pawankhind battle was a rearguard battle and a last stand that took place on July 13, 1660 at a mountain pass in the vicinity of fort vishalgad, near the city of kolhapur, maharashtra, India between the maratha sardar baji prabhu deshpande and siddi masud of adilshah sultanate.



GELAVADE

Gelavade village, gelvade panchayat, taluka - shahuwadi is situated in kolhapur district. People of this village are living in very peaceful manner. Agriculture is the main profession of this village.

Still this village is waiting for industrial development. Education, drinking water, road and electricity are main concern of this village. Medicine and health services has to be improved.

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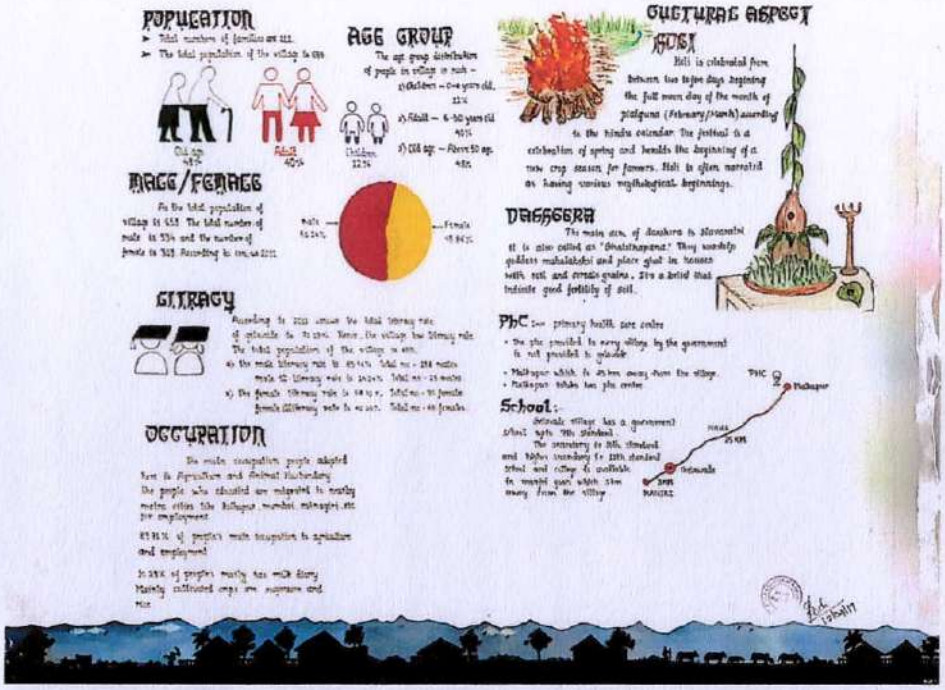

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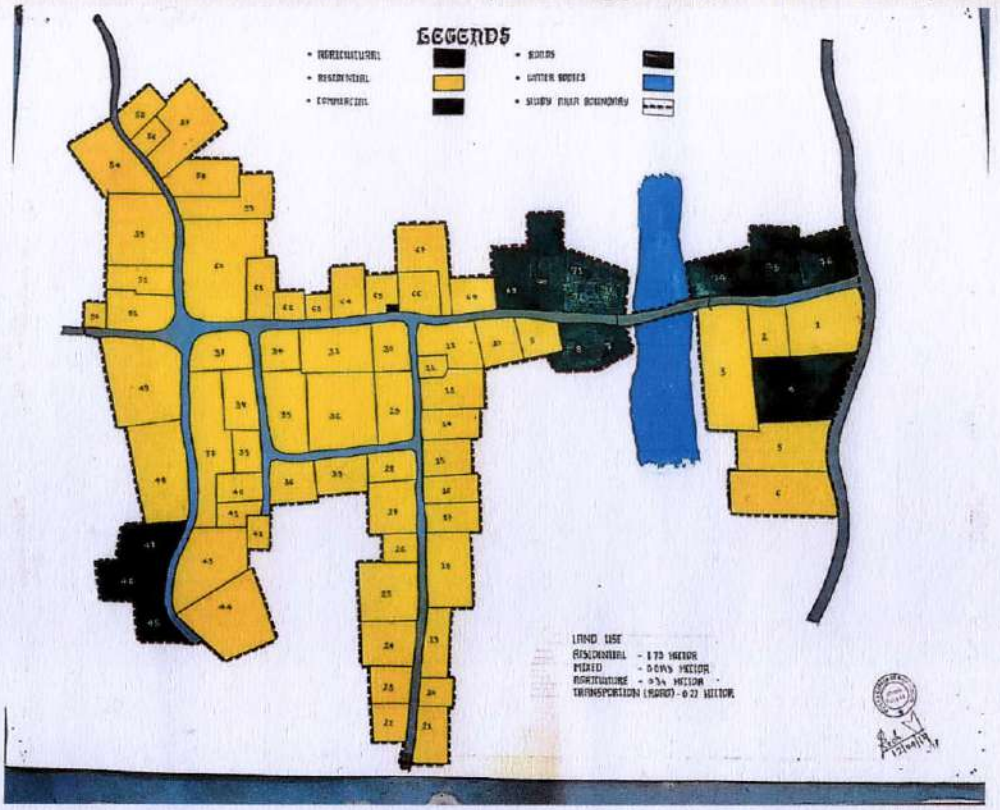

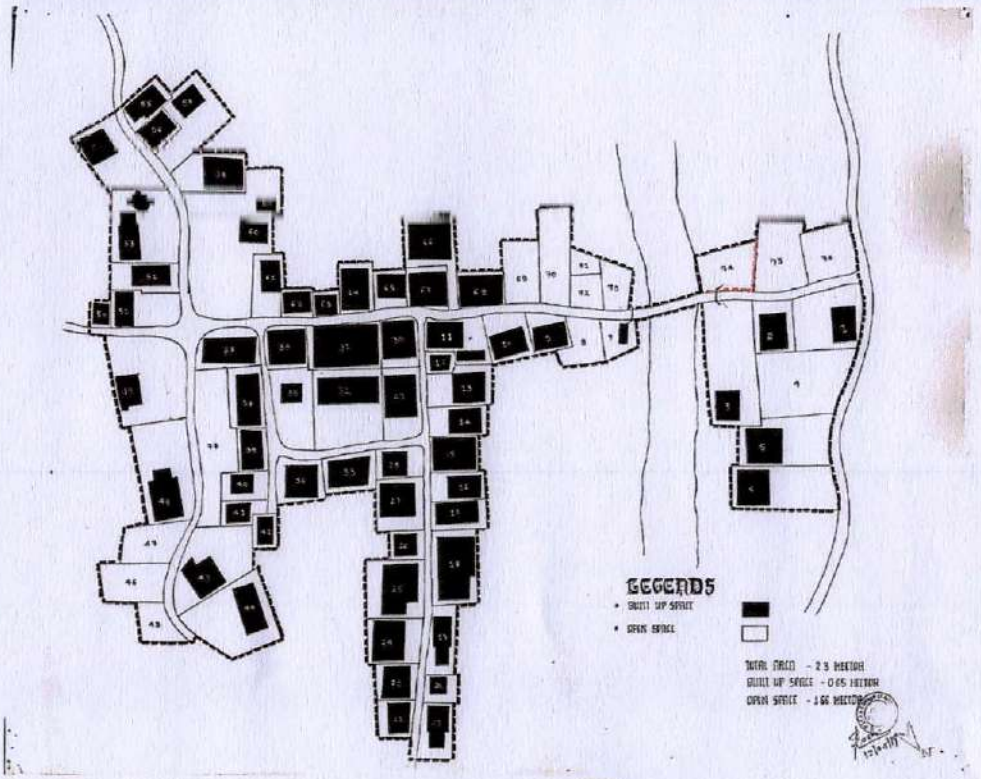

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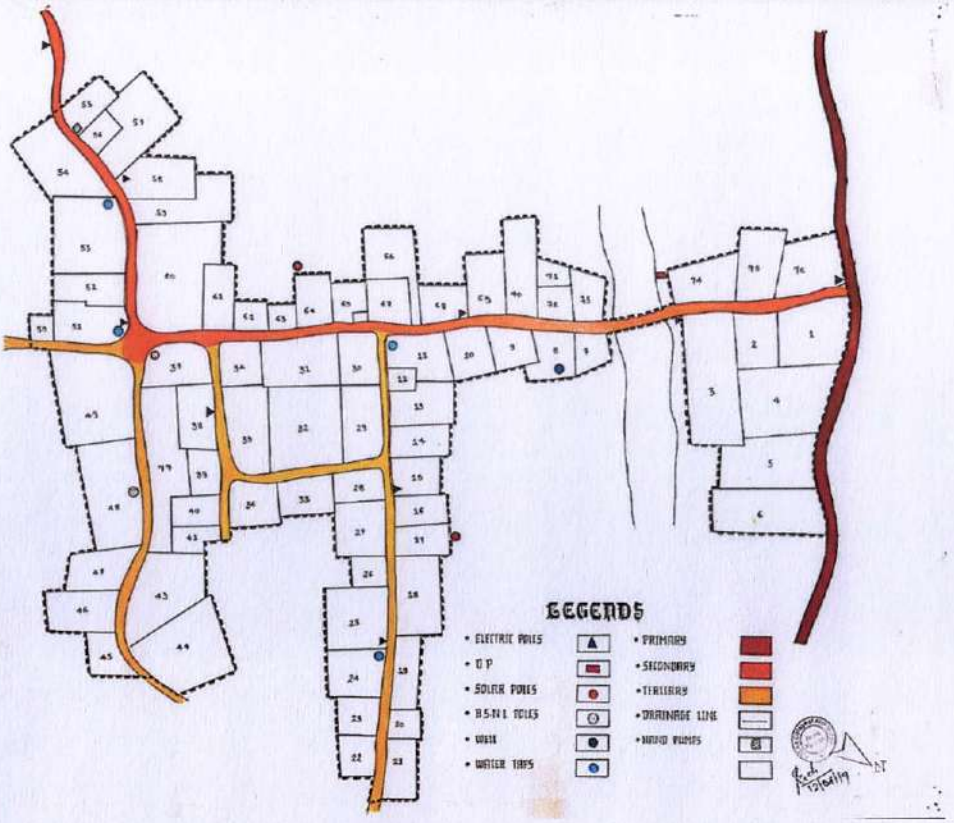

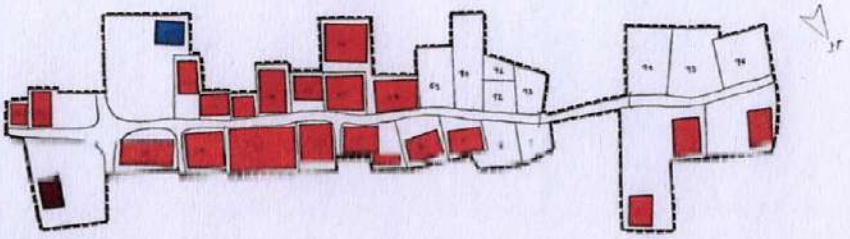

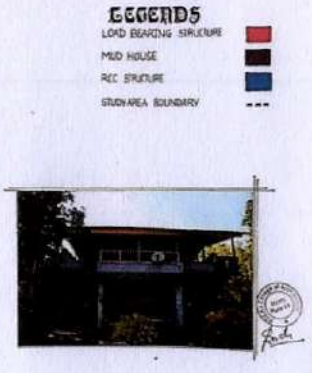

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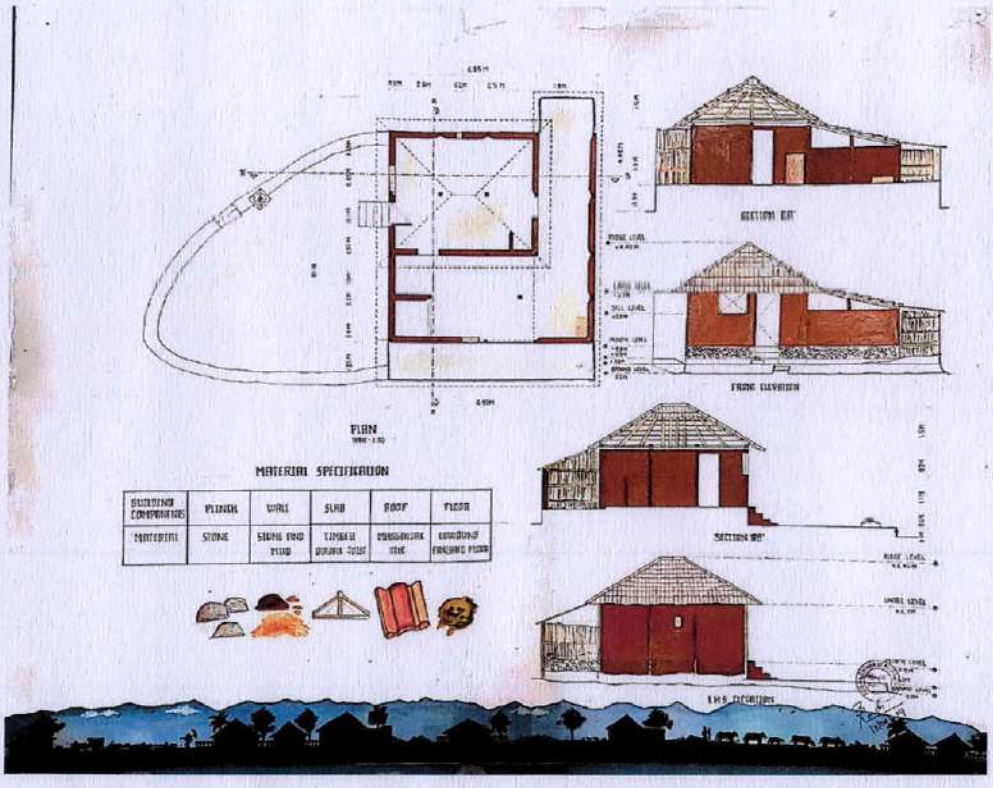
PROPERTY SR NO	LAND USE	AREA IN SQ. MT	BUILTUP AREA IN SQ MT.	TOTAL ROAD AREA	TOTAL STUDY AREA	OPEN SPACE
1	RESIDENTIAL	400.9	21.0			
2	RESIDENTIAL	134.9	104			
3	RESIDENTIAL	640	80			
4	RESIDENTIAL	606.5				
5	RESIDENTIAL	493	134			
6	RESIDENTIAL	462	100			
7	AGRICULTURAL	168				
8	AGRICULTURAL	125				
9	RESIDENTIAL	130	82.5			
10	RESIDENTIAL	195	45			
11	RESIDENTIAL	300	150			
12	RESIDENTIAL	95	35			
13	RESIDENTIAL	270	110			
14	RESIDENTIAL	190	80			
15	RESIDENTIAL	192	154			
16	RESIDENTIAL	153	80			
17	RESIDENTIAL	180	40			
18	RESIDENTIAL	260	150.5			
19	RESIDENTIAL	170	87			
20	RESIDENTIAL	120	27.5			
21	RESIDENTIAL	198	81			
22	RESIDENTIAL	144	100			
23	RESIDENTIAL	169	40			
24	RESIDENTIAL	266	130			
25	RESIDENTIAL	340	165			
26	RESIDENTIAL	126	45			
27	RESIDENTIAL	305	152			
28	RESIDENTIAL	169	72			
29	RESIDENTIAL	315	147			
30	RESIDENTIAL	192	132			
31	RESIDENTIAL	580	245.5			
32	RESIDENTIAL	360	180			
33	RESIDENTIAL	298	156			
34	RESIDENTIAL	881	152			
35	RESIDENTIAL	178	40			
36	RESIDENTIAL	240	130.2			
37	RESIDENTIAL	275	153			
38	RESIDENTIAL	220	129.6			
39	RESIDENTIAL	140	65			
40	RESIDENTIAL	150	42			
41	RESIDENTIAL	150	48			
42	RESIDENTIAL	98	45			
43	RESIDENTIAL	840.4	175			
44	RESIDENTIAL	464	111			
45	AGRICULTURAL	542				
46	AGRICULTURAL	276				
47	AGRICULTURAL	291				
48	RESIDENTIAL	654	169			
49	RESIDENTIAL	631.1	226			
50	RESIDENTIAL	92	40			
51	RESIDENTIAL	286	66			
52	RESIDENTIAL	238	72			
53	RESIDENTIAL	545	123.5			
54	RESIDENTIAL	469	145			
55	RESIDENTIAL	135	67			
56	RESIDENTIAL	184	93.5			
57	RESIDENTIAL	340	63			
58	RESIDENTIAL	1075	120			
59	RESIDENTIAL	5553	3655			
60	RESIDENTIAL	344	63			
61	RESIDENTIAL	180	85			
62	RESIDENTIAL	992	63			
63	RESIDENTIAL	70.5	44			
64	RESIDENTIAL	176	150.5			
65	MIXED USE	345	72			
66	RESIDENTIAL	742.5	160			
67	RESIDENTIAL	280	132			
68	RESIDENTIAL	180	145			
69	AGRICULTURAL	240				
70	AGRICULTURAL	328				
71	AGRICULTURAL	78				
72	AGRICULTURAL	111				
73	AGRICULTURAL	197.2				
74	AGRICULTURAL	196				
75	AGRICULTURAL	215				
76	AGRICULTURAL	240				
77	RESIDENTIAL	706				
TOTAL (IN SQ MTS)		30963.00	6533.25	7237.1	23790.10	16446.15
IN HECT.		3.10	0.65	0.72	2.38	1.65



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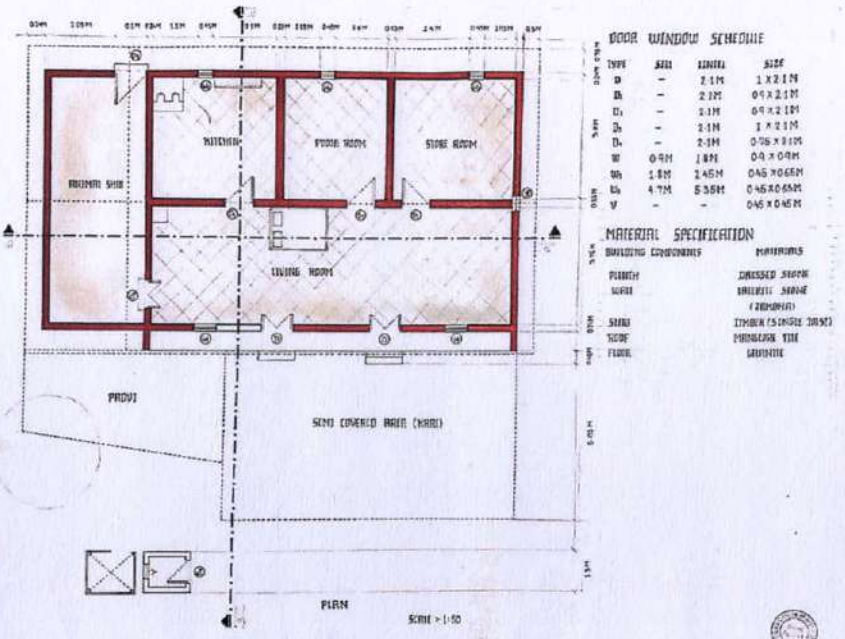

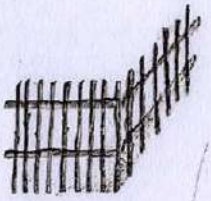

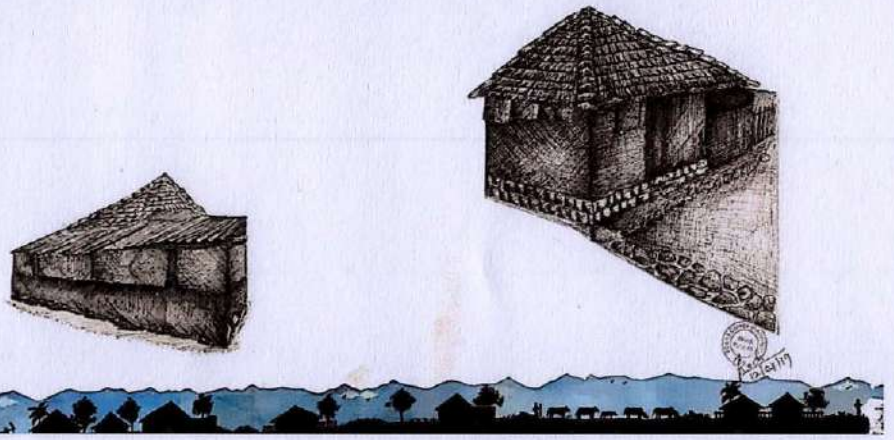

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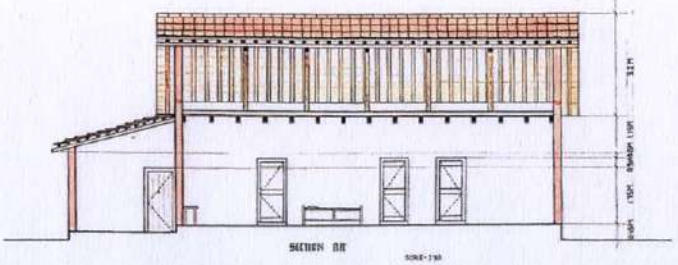

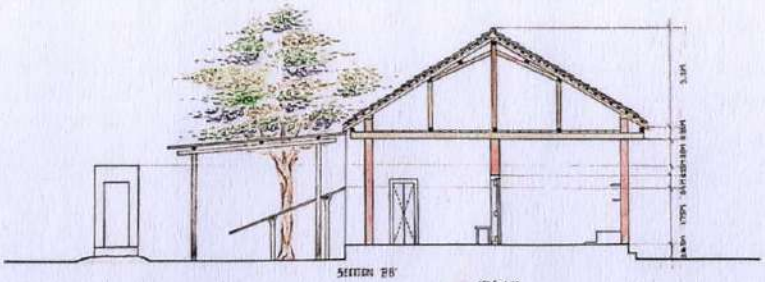

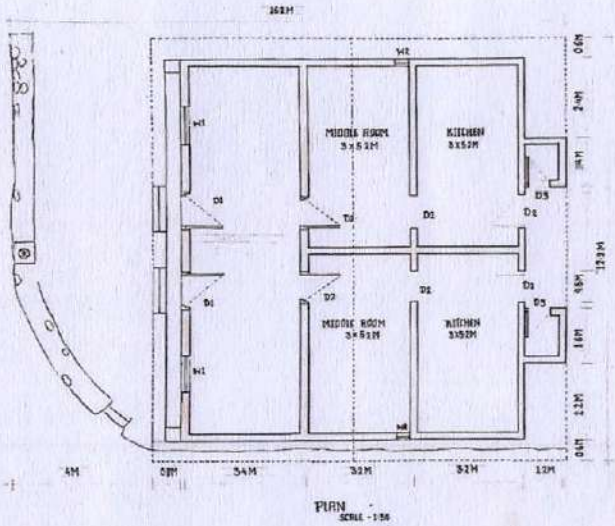

- THIS HOUSE WAS A LOAD BEARING STRUCTURE
- IT WAS LOCATED ALONG SECONDARY ROAD.
- THIS HOUSE CONSIST OF DOUBLE FLOOR.
- IT HAVE SLOPING ROOF BUILD UP BY MANGALORE TILES.
- IT WAS SINGLE COST STRUCTURE WALL WERE BUILD BY LATERITE STONE.
- THE OWNER OF THIS HOUSE WAS PANDURANG SALUNKE.
- IT WAS BUILT UNDER PRADHAN MANTRI AWAS YOJANA

CONSTRUCTION MATERIALS
LATERITE STONE
MANGALORE TILES
TIMBER
MUD

LEGENDS

D1	1.1M x 2M
D2	0.9M x 2M
D3	0.75M x 1.8M
W1	1.1M x 0.9M
W2	0.4M x 0.6M

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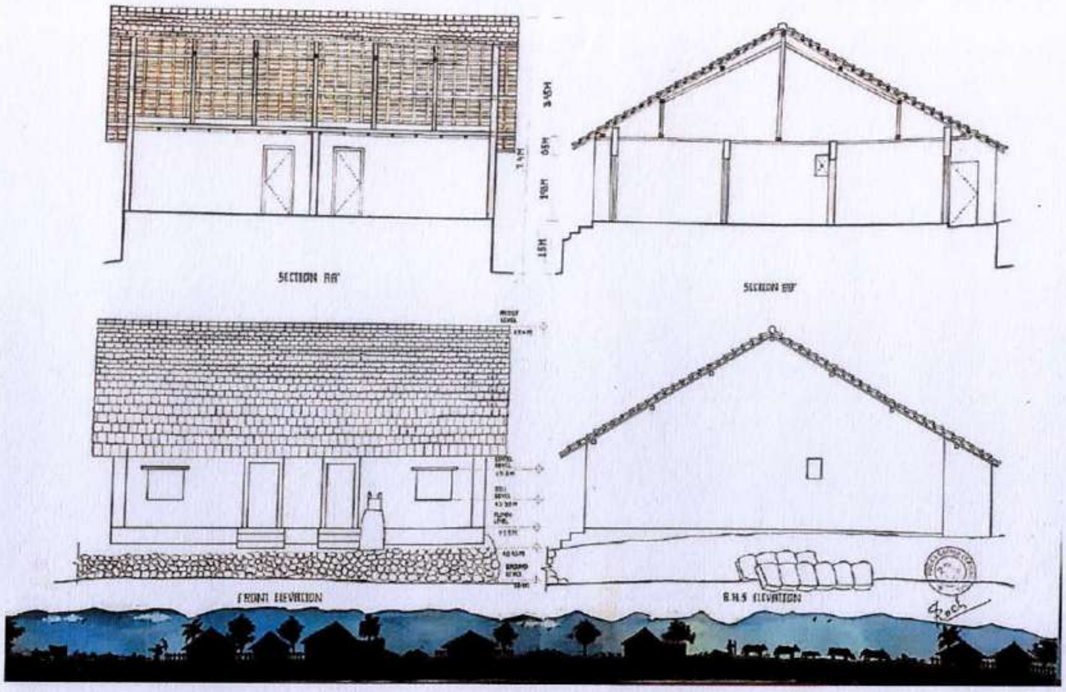
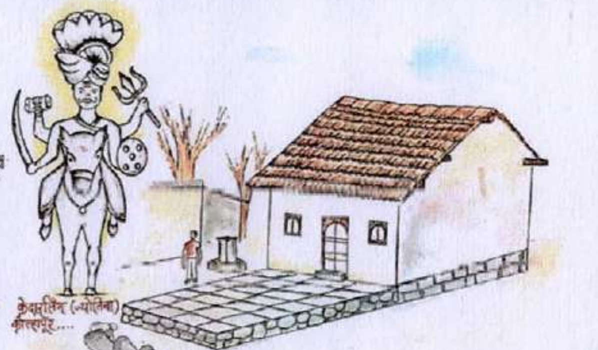


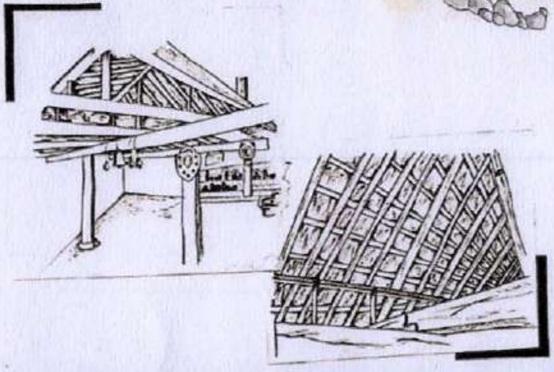
HISTORY

It was Kedarling temple.
It is situated in gelawade village, shahuwadi tal. dist. kolhapur.
It was established in the year 1987.
Firstly temple was situated near the kasari dam.
Then it was shifted near gelawade village.
And now the temple is about 650m from village.
The people of gelawade village worship to vitthal and kedarling.
Vitthal, kedarling and Jangoba idols are kept in the temple.
Two festivals are [illegible]

GOD BELIEF

There were stones kept outside the temple. The belief behind the stones was, they were used to believe that Gods are everywhere so believe their ancestor soul is alive in that stone so, thats why that stones were kept and do puja over there.





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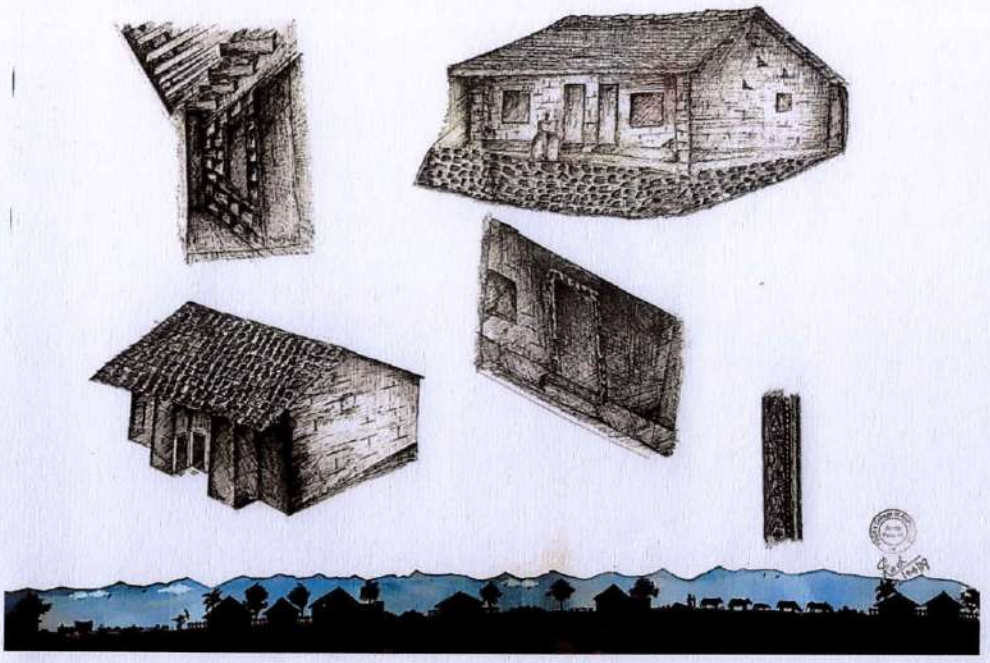

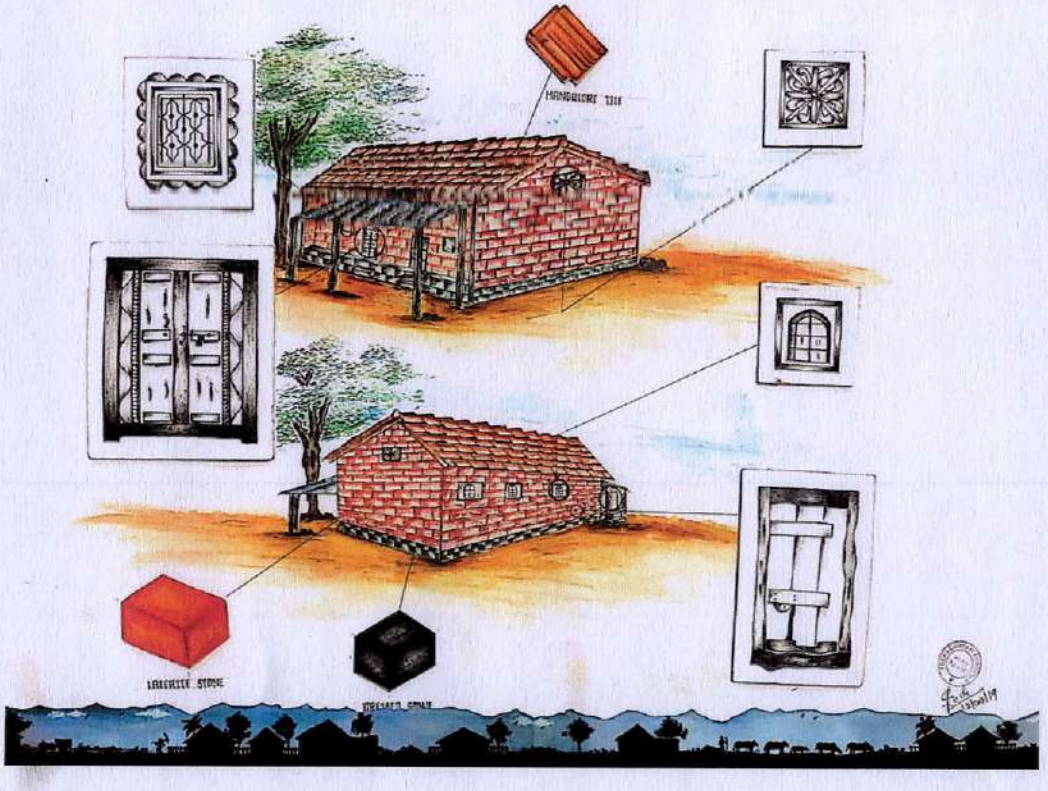

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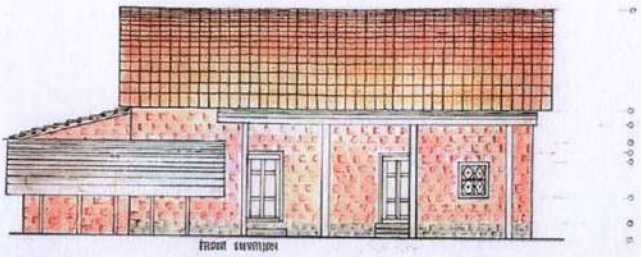

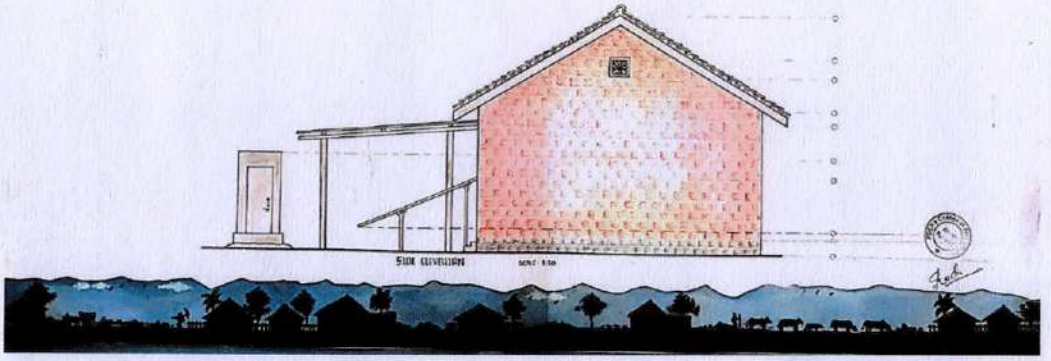

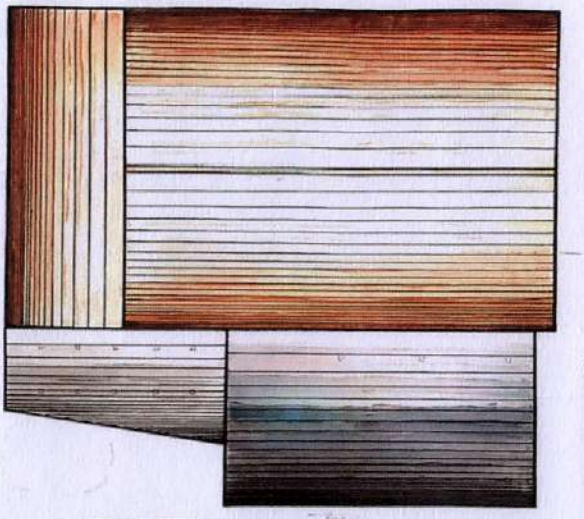

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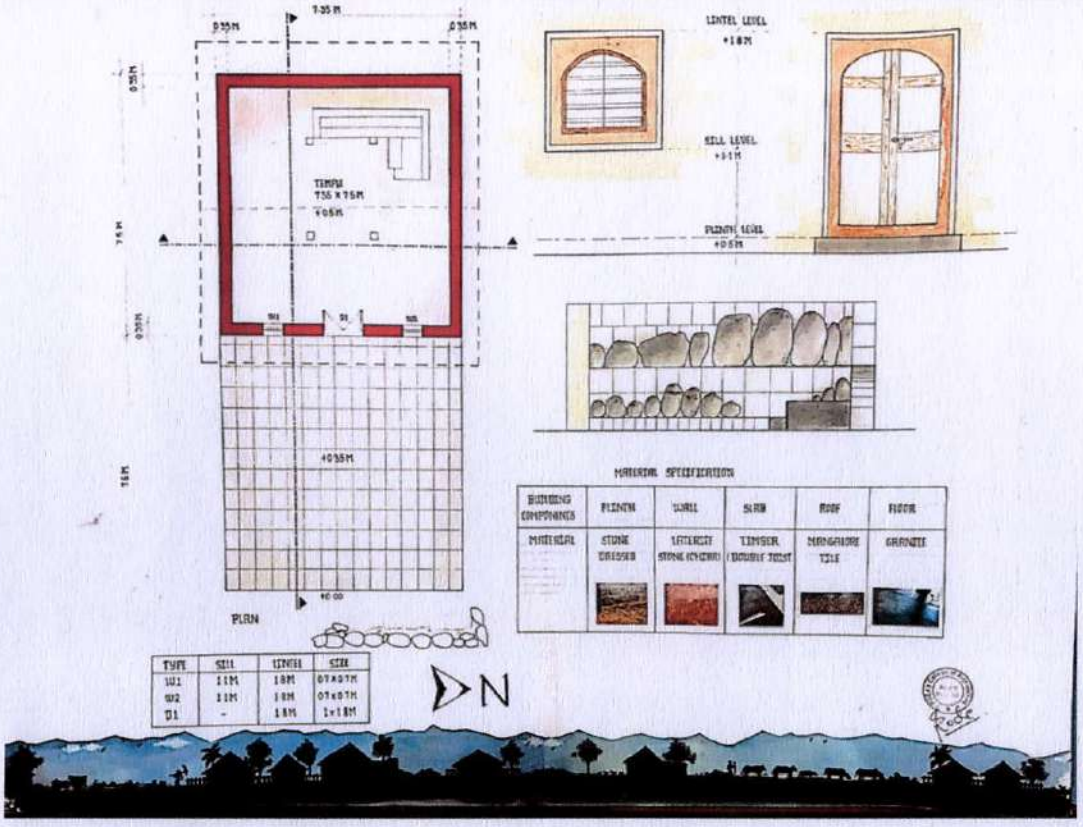

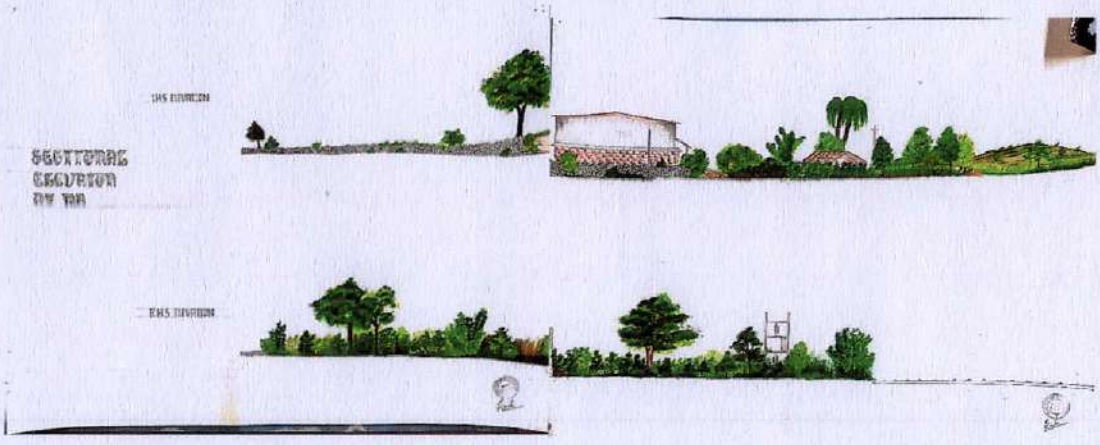

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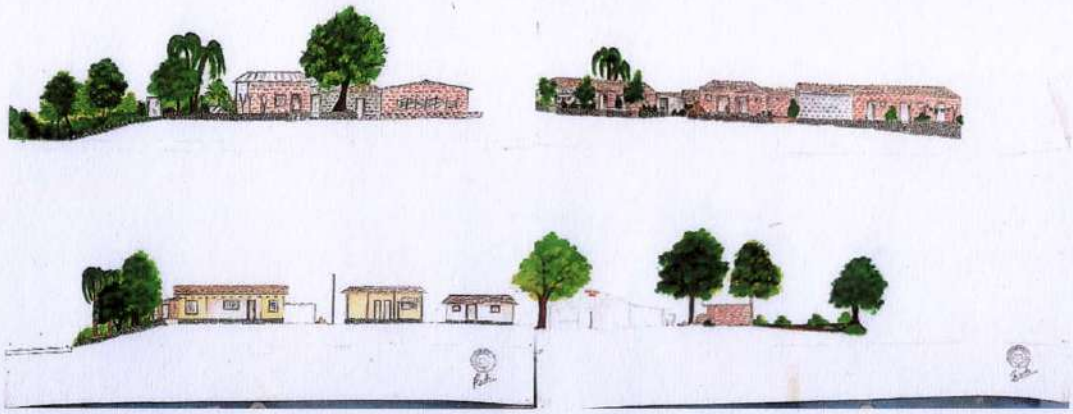

- After the Settlement study students derive that there were no medical facilities in the village. People have to go 15km from the settlement and it is too far in case of emergency.
- As per the requirement Students Design Primary Health Care Center(**PHC**)

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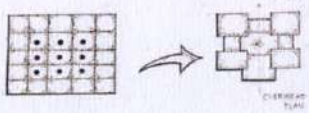
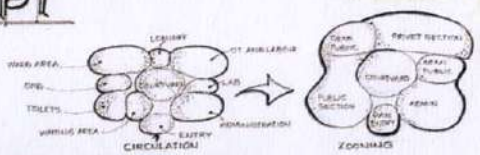
CONCEPT

STRUCTURAL CONCEPT

- USING STRUCTURAL CONCEPT IS " WADA " LIKE STRUCTURE.
- FOR FOUR, SIDE ENCLOSED FORM AND OPEN TO SKY AT MIDDLE.
- USING SQUARE IN GRID FORM PATTERN.





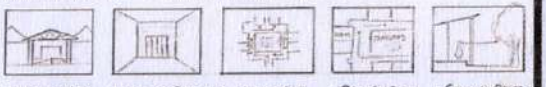
• ZONING AND CIRCULATION :-

- ZONING OF HOSPITAL (PHC) DIVIDED INTO SIX SECTIONS.

• CIRCULATION ELEMENTS :-

IN A PHC (HOSPITAL) PLAN USING A CIRCULATION ELEMENTS AS LIKE :-

1. APPROACH - DISTANCE VIEW → USING A FRONTAL APPROCH.
2. ENTRANCE - OUTSIDE TO INSIDE → USING FLUSH AND PROJECTED
3. CONFIGURATION OF PATH → USING LINEAR PATH.
4. PATH SPACE RELETION → USING PASS BY SPACE.
5. FORM OF CIRCULARION SPACE → USING ONE SIDE CIRCULATION SPACE.



• FRONTAL APPROCH • FLUSH AND PROJECTED ENTRANCE • LINEAR PATH • PASS BY-SPACE • CIRCULAR SPACE

GRID FORM AND SPACE (ORGANIZATION) :-

- A HOSPITAL PLAN IS CREATED IN GRID PATTERN.
- THE CENTRAL COURTYARD IS CREATED IN SPACE.
- THE SURROUNDING AREA AND SURROUNDING LANDSCAP IS CREATED IN GRID PATTERN.

• COURTYARD :-

- THE COURTYARD IS DEPRESSED AND WALKING AREA IS ELEVATED.
- THE TREE IS PRESENT IN MID IN COURTYARD AND THEY HELP AIR CROSS VENTILATION.
- THE COURTYARD IS DEPRESSED IN THREE STEPS.

• SHADOW FORMATION :-

- DECIDUOUS TREES USED IN LANDSCAPING, THEY HELP TO PROVIDE SHADE IN THE SUMMER AND ALLOW SUN TO WARM STRUCTURE IN WINTER.

• USING ROOFING PATTERN :-

- BY USING PYRAMID HIP ROOF.
- THEY HAVE FOUR SIDED SLOP.

- BY USING DOUBLE FAN ROOF.
- THEY HAVE TWO SIDED SLOP.

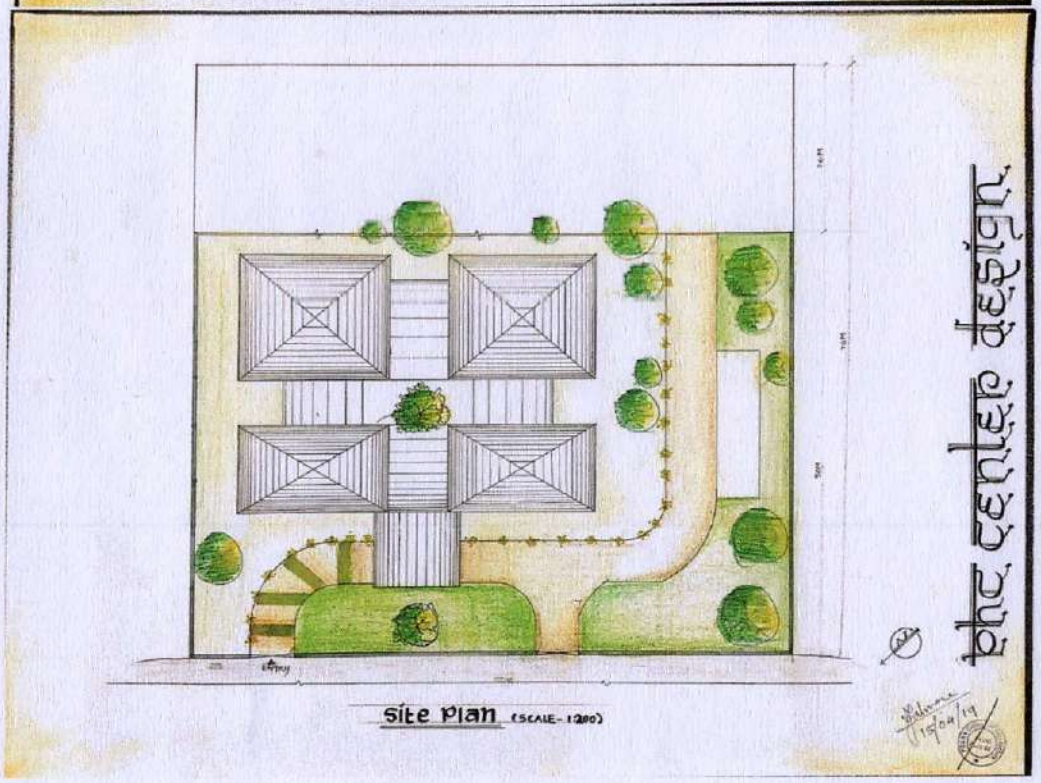
• USING MATERIALS :-

- BY USING 'CHIRA' STONES

- WOOD USED IN ROOFING JOINTS.

- MANGLORE TILES USED IN ROOF.

" phc center design "



SITE PLAN (SCALE- 1:200)

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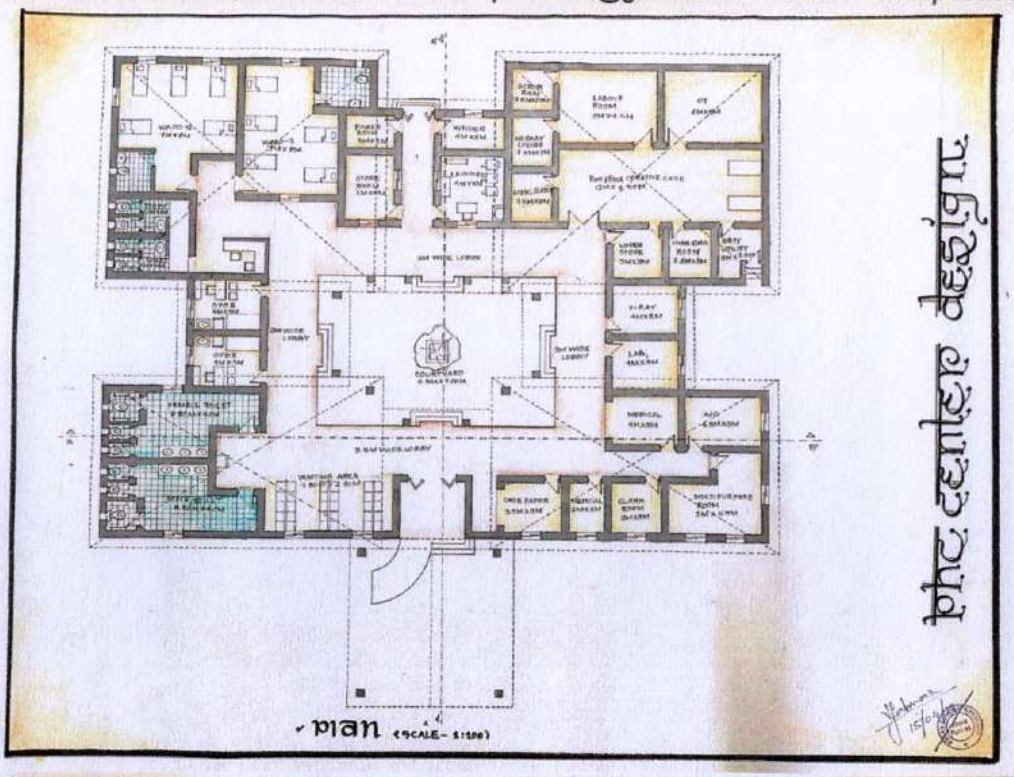

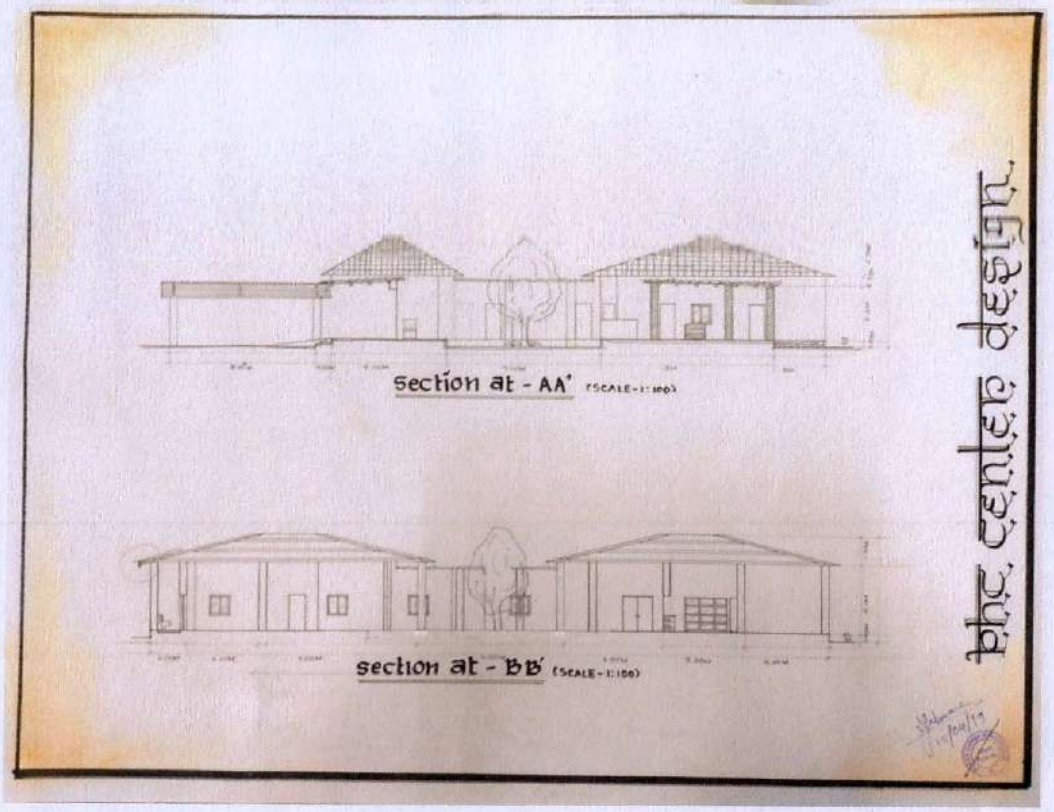

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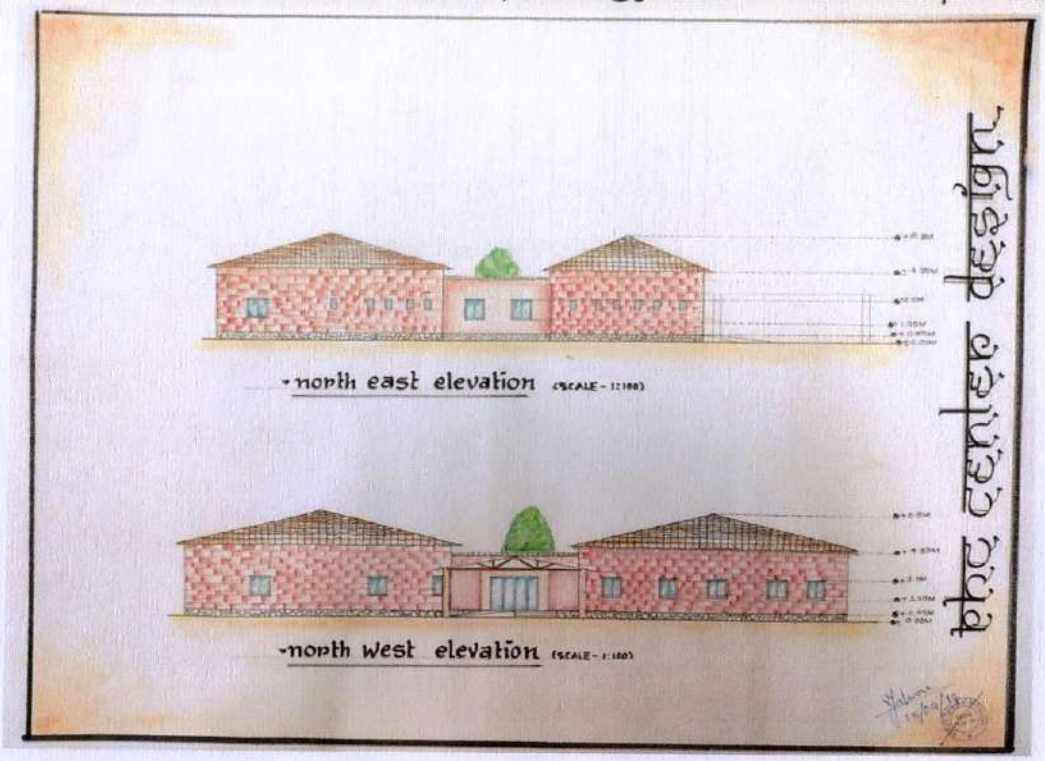

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STUDY TOUR ON TO CHAS (khed)

(Settlement study)

11 students of 1st year PDEA Along with the two Teaching faculties were taken to the chas ,Khed from 14-02-20 to 16-02-20.

Chas is a village in the state of Maharashtra , India on the left bank of Bhima River. Chas is under khed Taluka of Pune District in Maharashtra.

Aim :

The main aim of study tour is to aid students to acquire knowledge of functioning on village and factor affecting the settlement.

Objectives :

To study the types of load bearing structure.

To make a suitable plan and strategy for worthwhile development of settlement of study village.

To understand the various types of houses and the services provided to them.

Day 1 : 14-02-20

Students were taken to CHAS . The Settlement around the Chaskar Wada , Someshwar Temple & the chaskar wada were seen , there were Load bearing and old structures built with bricks as well as in the basalt stone. On the first day identified the area for the detailed study purpose.

Day 2: 15-02-20

Students started with the mapping of the identified area under the guidance of the teachers and detailed study of the someshwar temple and the chaskar wada were simultaneously done.

Day 3: 16-02-20

Students marked out all the services like electrical poles , Drainage etc and finished the work, Students also interviewed the people of CHAS. With all the data student and teachers returned to Pune.

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Conclusion. Study was successfully conducted which helps the students to learn more with practical Exposure

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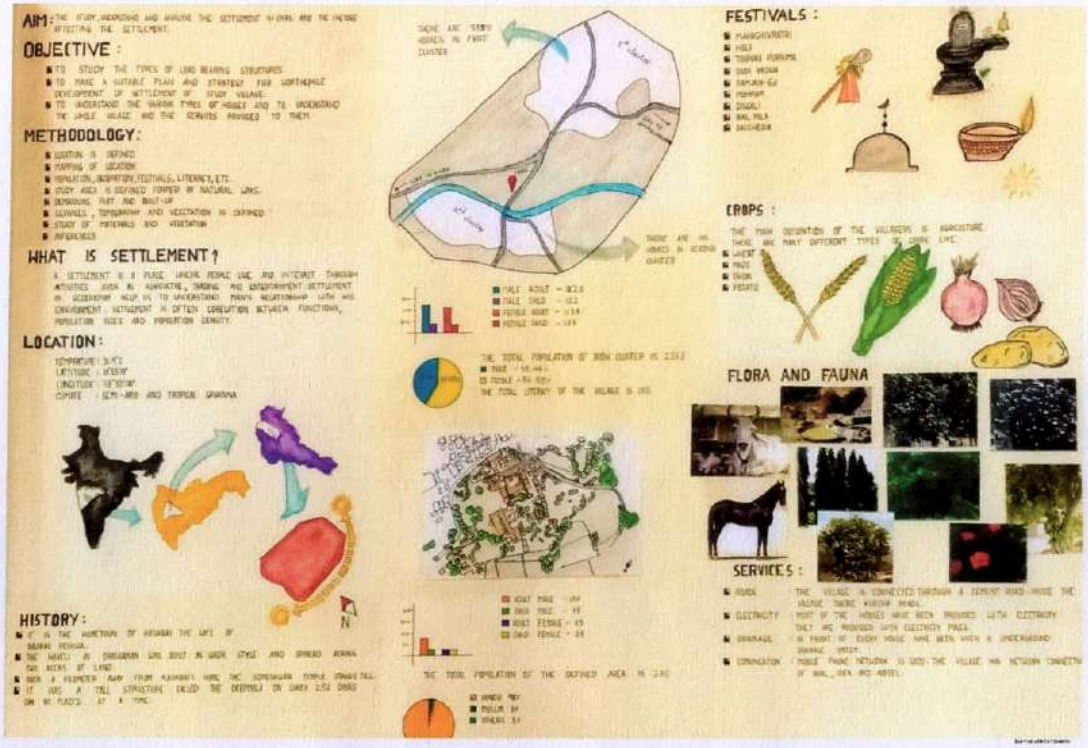

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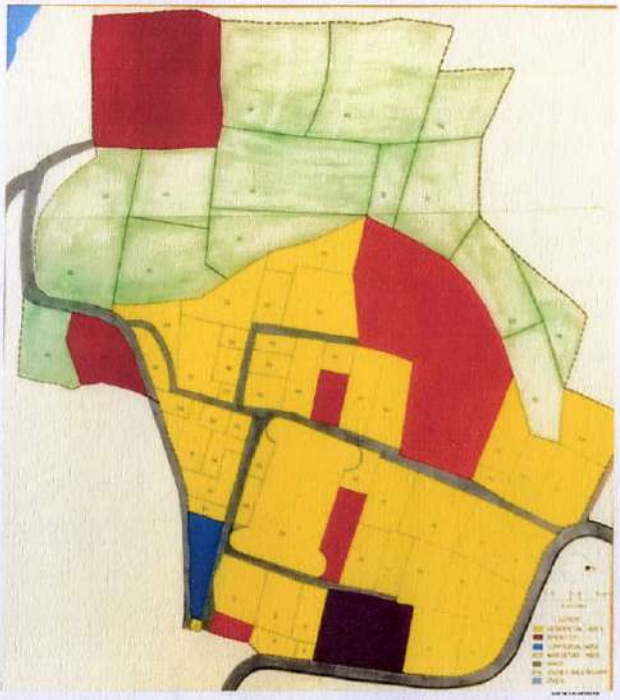

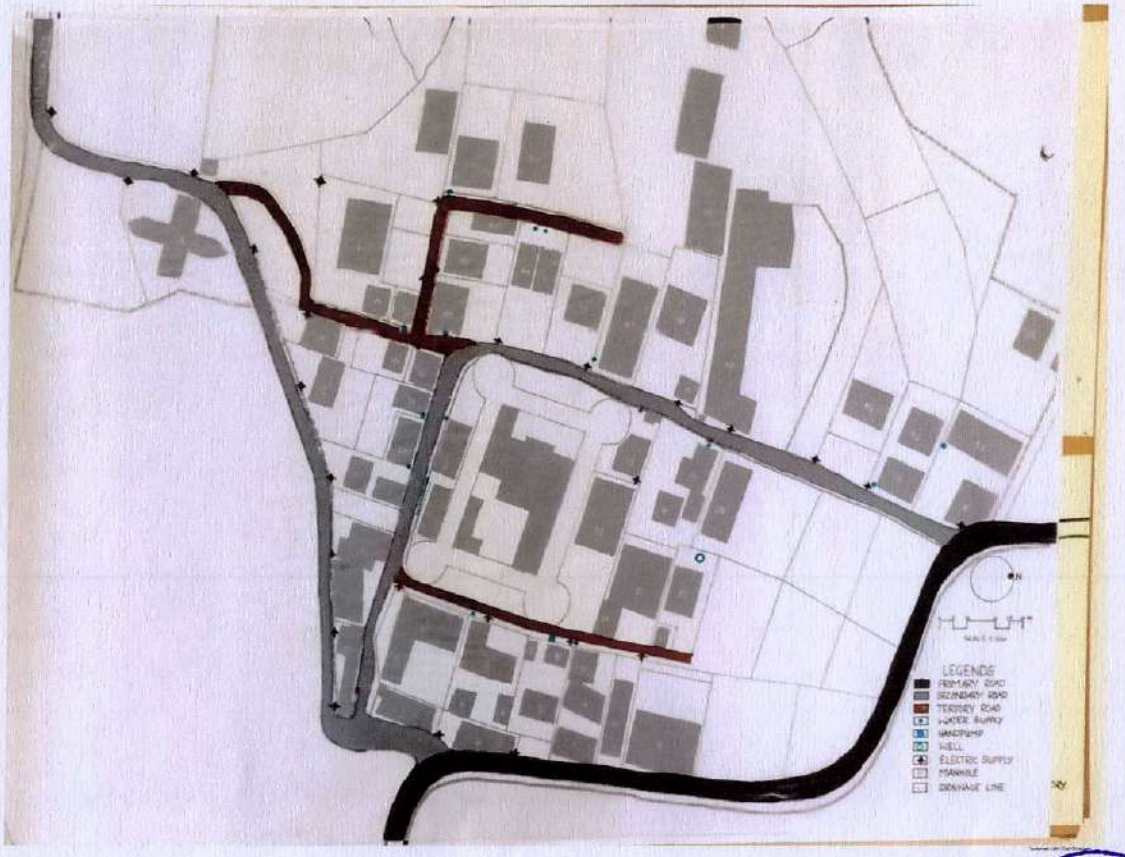

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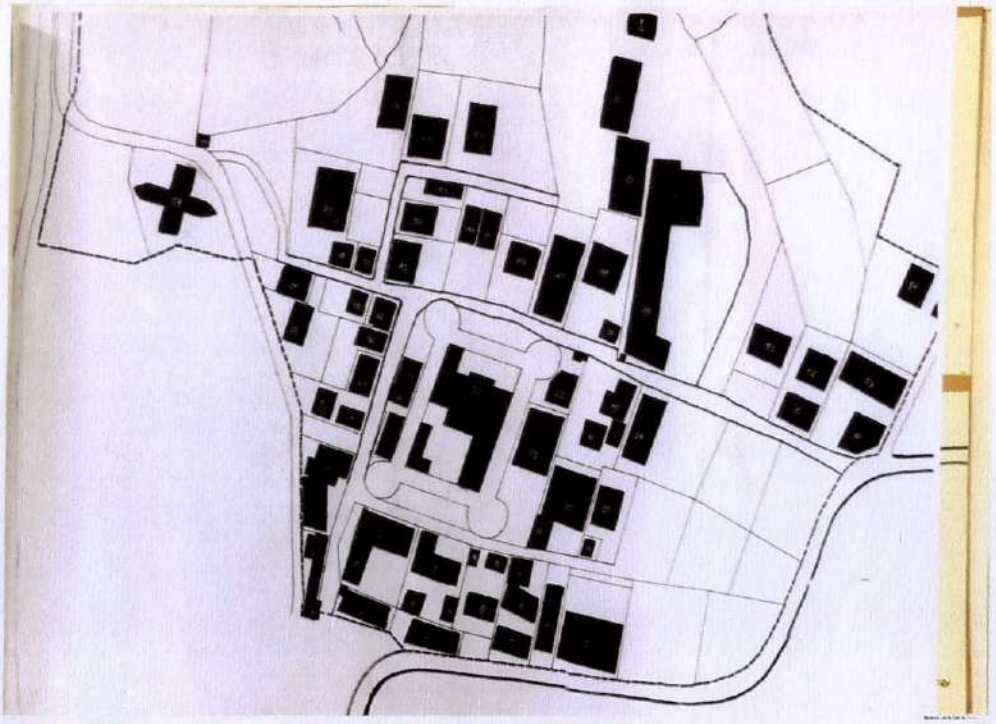

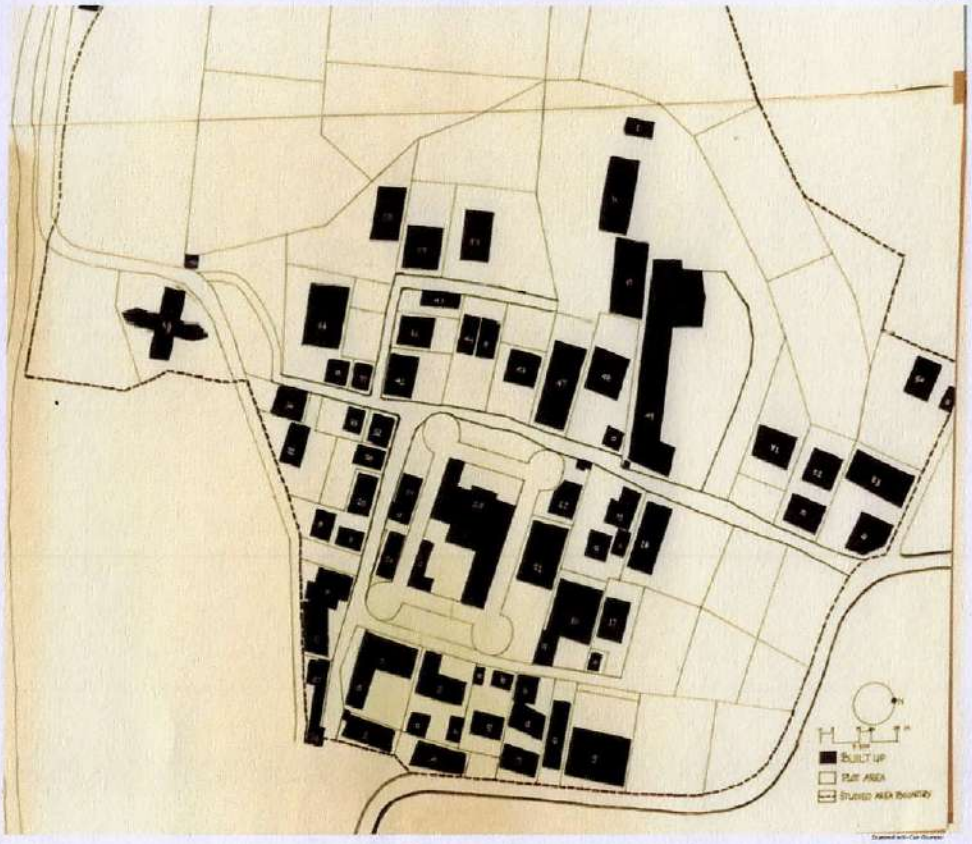

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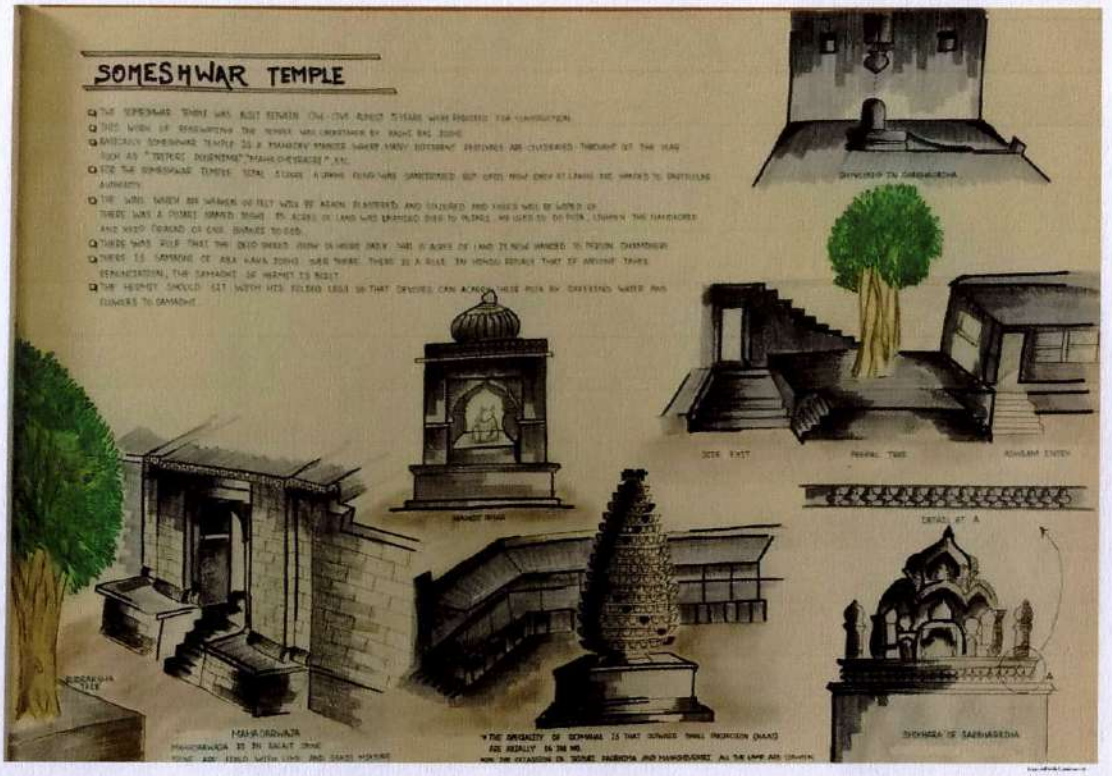

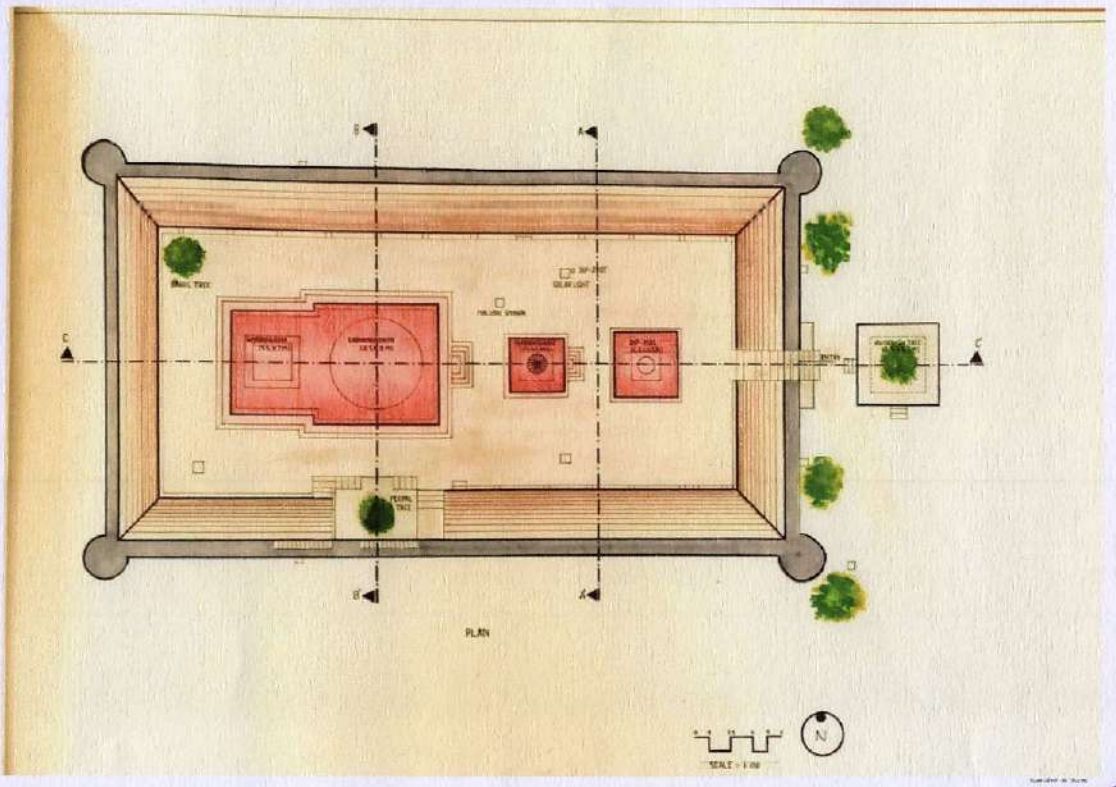

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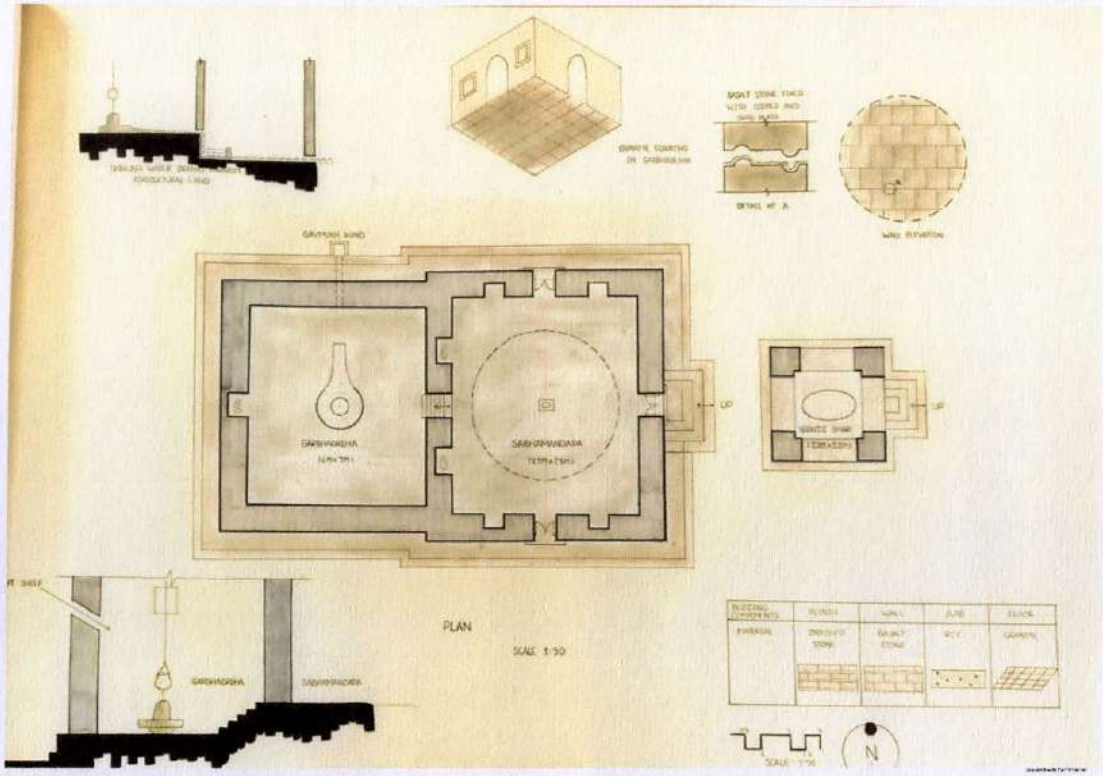

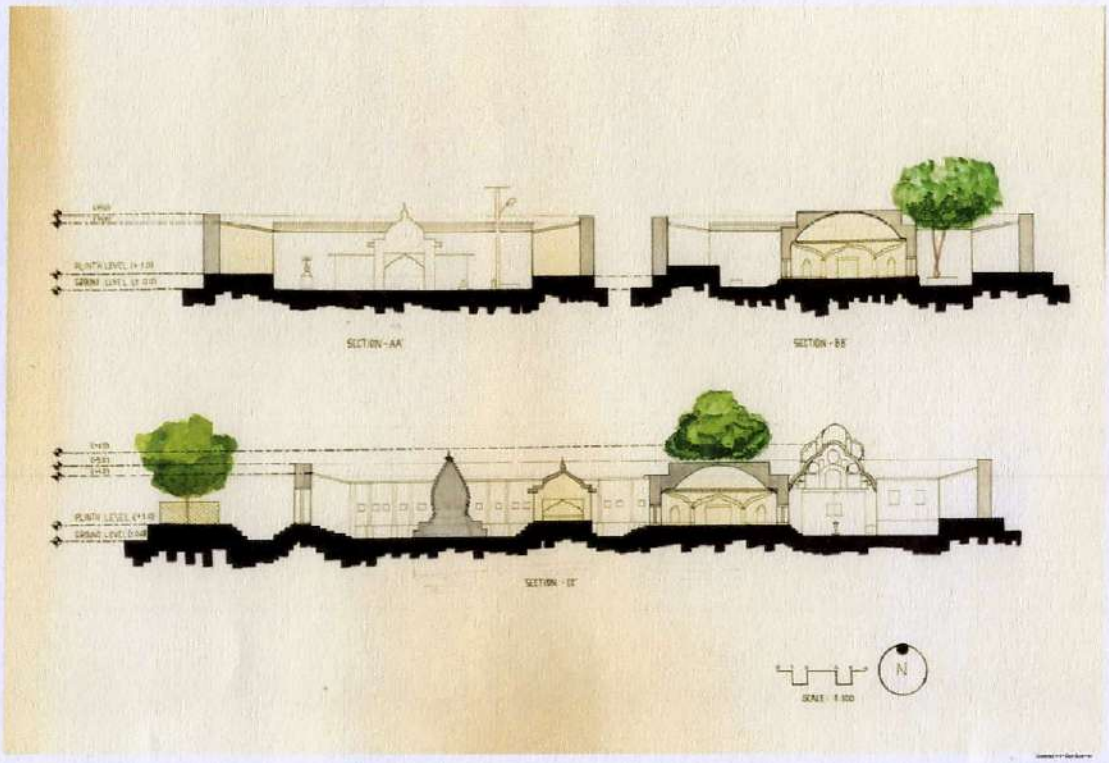

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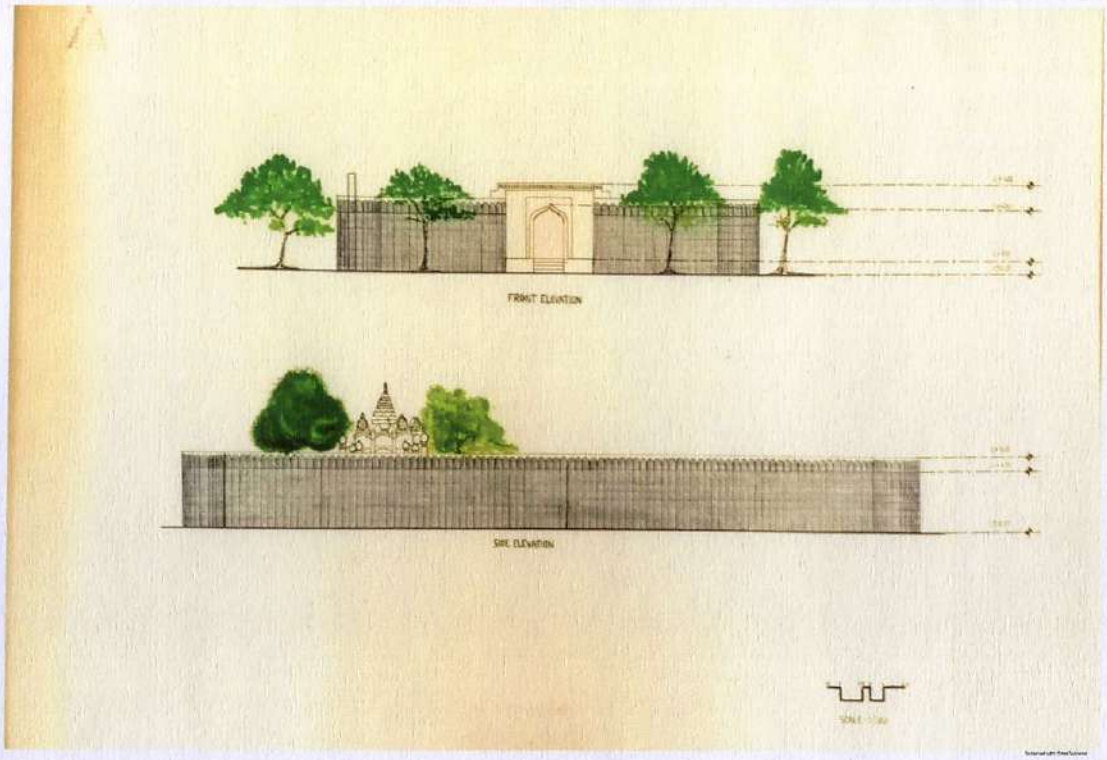

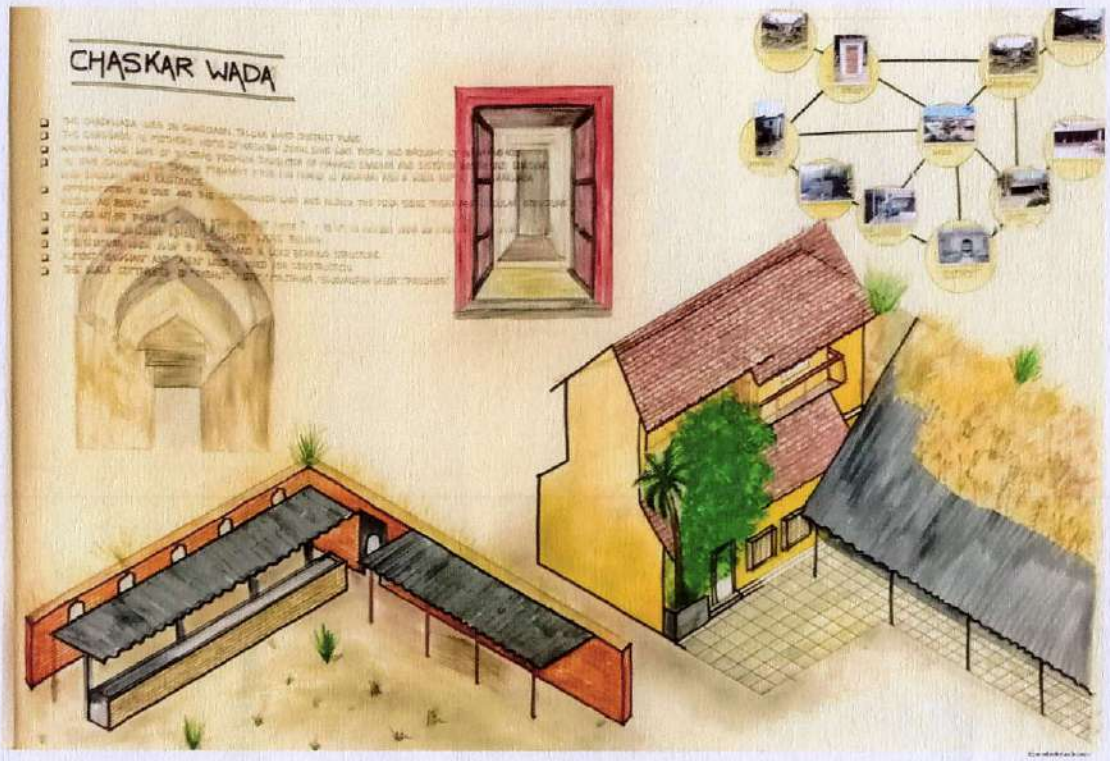

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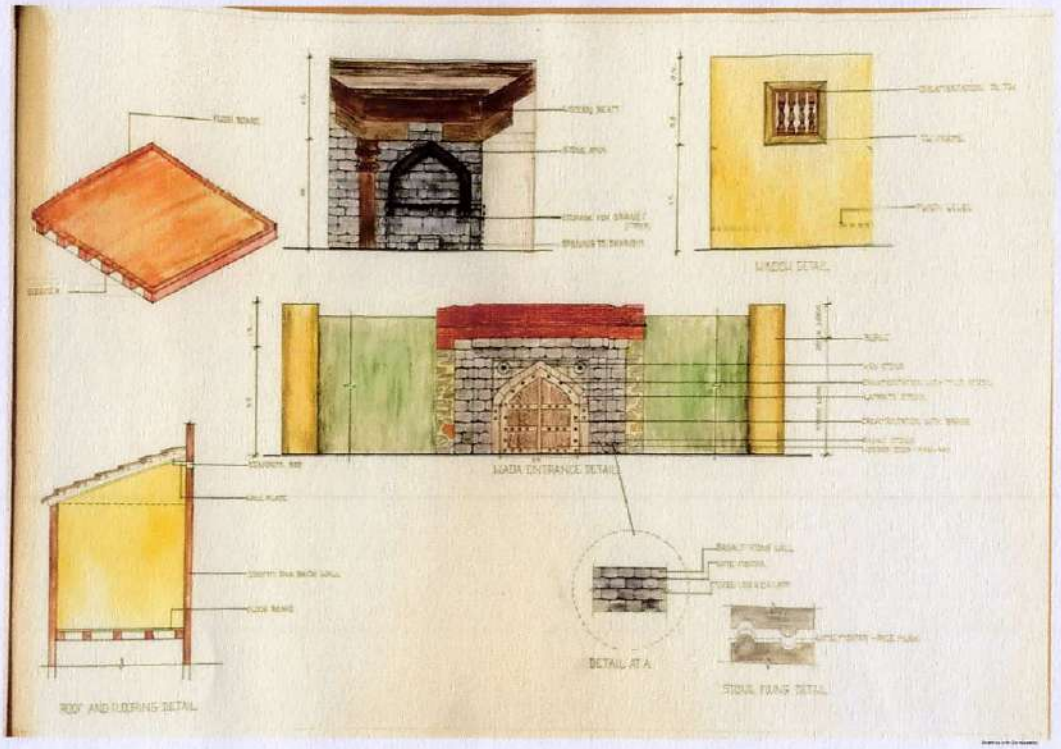

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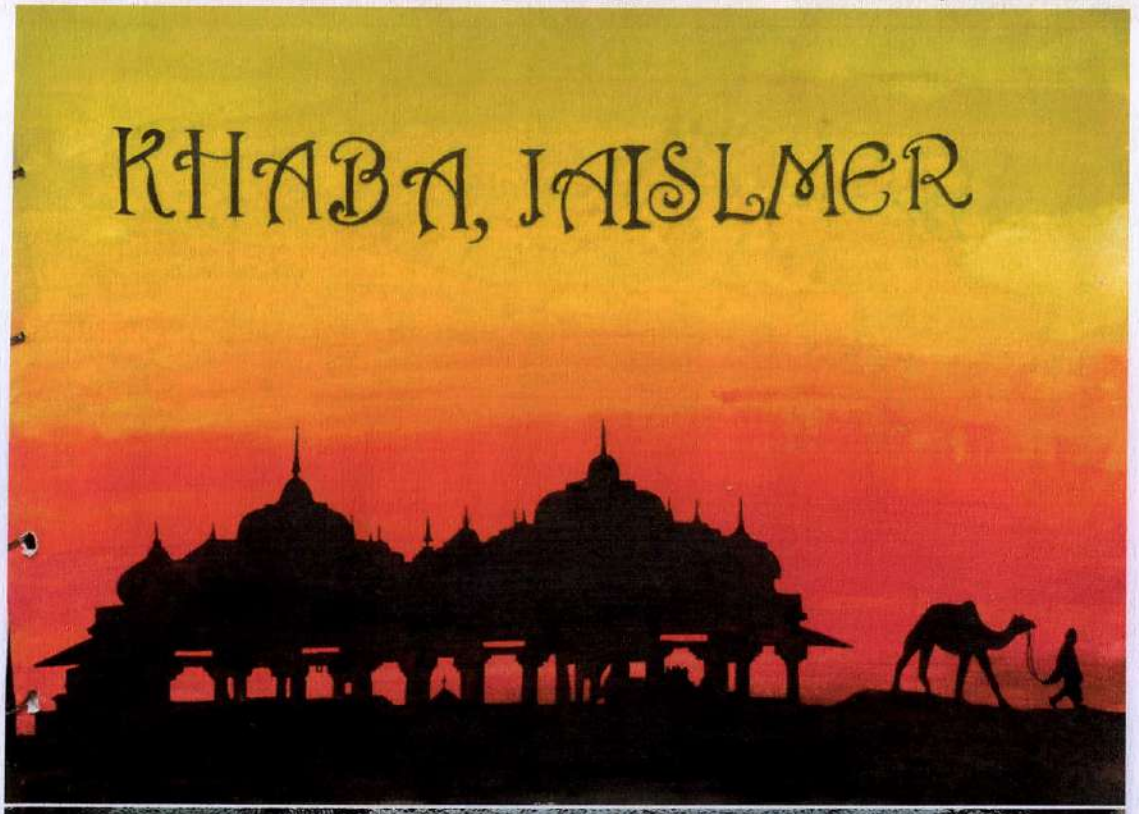

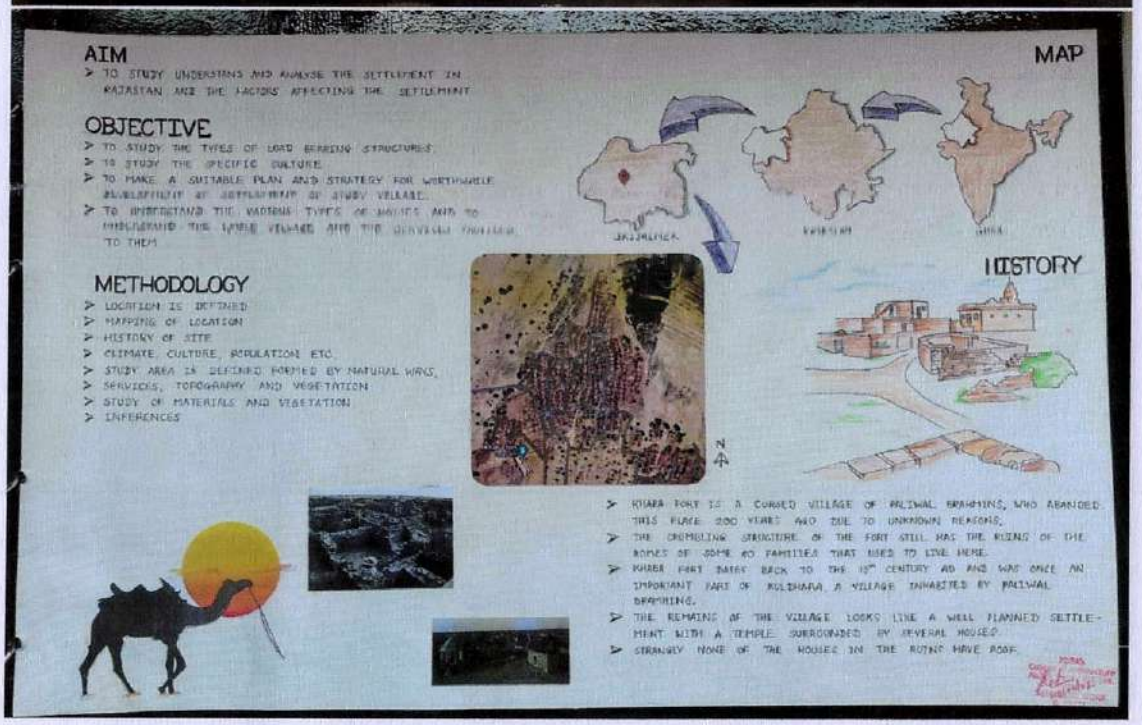

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CLIMATE

- IN THE DESERT AREAS, IT IS USUALLY HOT & DRY CLIMATE. JAISALMER, BEING AN ARID DESERT REGION, IS PRONE TO EXTREMES IN TERM OF TEMPERATURE.
- THE MAXIMUM SUMMER TEMPERATURE IS AROUND 49°(120°F). AND MINIMUM IS 26°C (79°F).
- THE MAXIMUM WINTER TEMPERATURE IS AROUND 23.6°C (74.5°F) AND MINIMUM IS 5°C (41°F).
- THE AVERAGE RAINFALL IS 209.5 MILIMETERS.


CULTURE

- MOST OF THE NATIVE POPULATION OF JAISALMER FOLLOWS HINDU RELIGIOUS CUSTOMS AND RITUALS.
- THE TRADITIONAL FOLK MUSIK AND DANCE IS AN INTEGRAL PART OF THE SOCIAL AND CULTURAL LIFE OF THE INDIGENOUS INHABITANTS OF JAISALMER. KALBELIYA DANCE OF THE COMMUNITY OF SNAKE CHARMERS PORTRAYS THE RICH ARTISTIC CALIBER AND CREATIVE IMAGENATION OF THE DANCERS.



MATERIAL

BUILDING CONSTRUCTION THE COMMON BUILDING MATERIAL USED IN JAISALMER IS STONE OF OF WHICH THERE ARE TWO TYPES. LIGHT YELLOWISH SANDSTONE IS USED FOR WALLS WHICH ARE 0.45m OR MORE IN THICKNESS. IN BETTER QUANTITY CONSTRUCTION THE STONE IS DRESSED AND JOINTS MADE ACCURATELY WITHOUT ANY MORTAR.

SOIL CONDITION

HAVE ALKALINE AND SALINE SOILS WITH A CALCAREOUS BASE. THERE IS SOME NITRATE CONCENTRATION IN THE SOIL OF THESE REGIONS. THE JAISALMER REGION HAS REGUR SAND THAT VARIES FROM SANDY TO SANDY LOAM.

FLORA - FAUNA

FLORA- RONJ, KHAIR, ROHIRA, DHOK, KHEJRI, PALM TREES, BER, AAK SHRUB, SEWAN GRASS, ETC...

FAUNA - BIRDS.- GREAT INDIAN BUSTARD, FALCONS, EAGLES, VULTURES, BEE-EATERS, SHRIKES, LARKS, DEMOISELLE CRANE, MAGDEEN'S BUSTARD, SANDGROUSE, LONG-LEGGED, HONEY BUZZARDS, CHATS, BABBLERS, KITES, ETC.

- KEJRI OR PROSOPIS CINERARIA ARE THE MOST WIDELY FOUND TREES IN THE RAJASTHAN.


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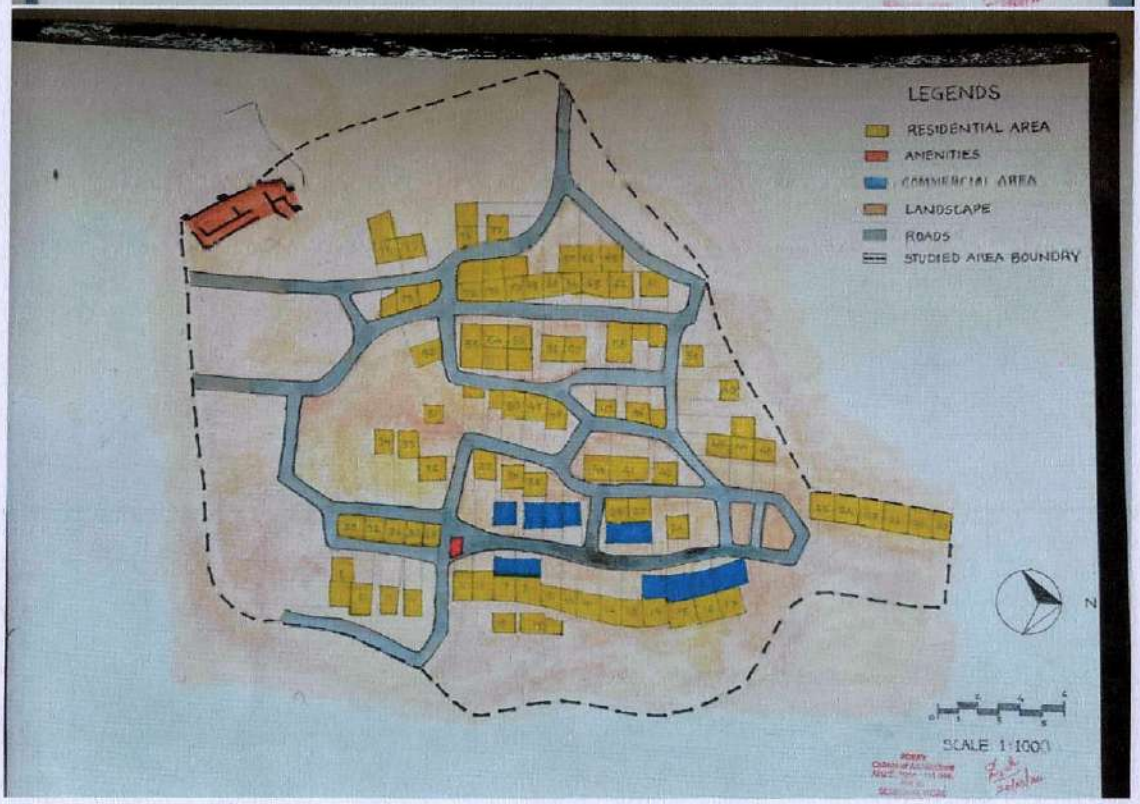

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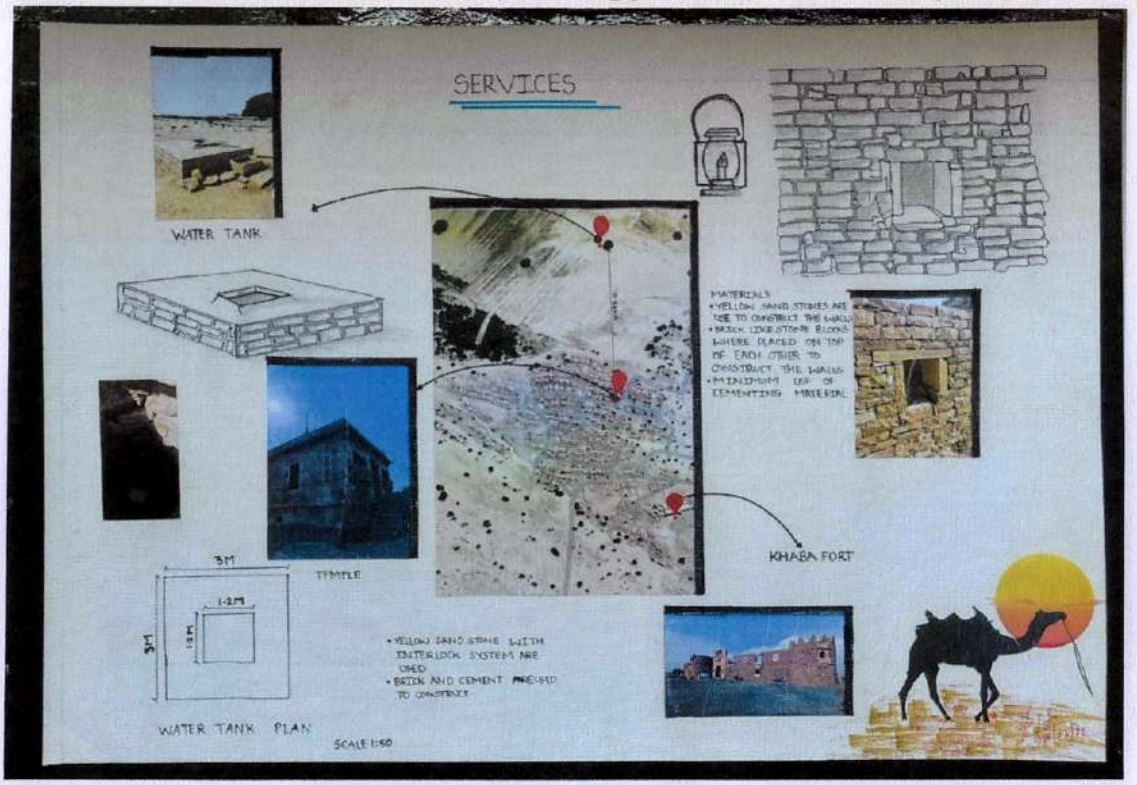

- After the Settlement study students derive that there is requirement of Exhibition center.
- Students design **Exhibition center**.

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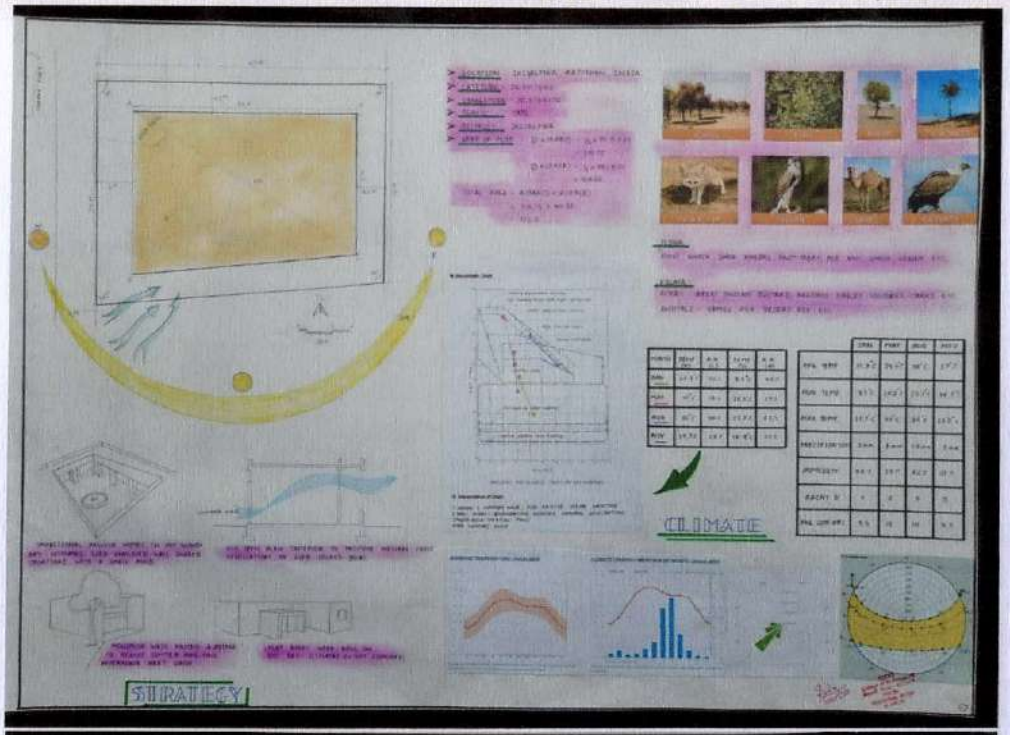

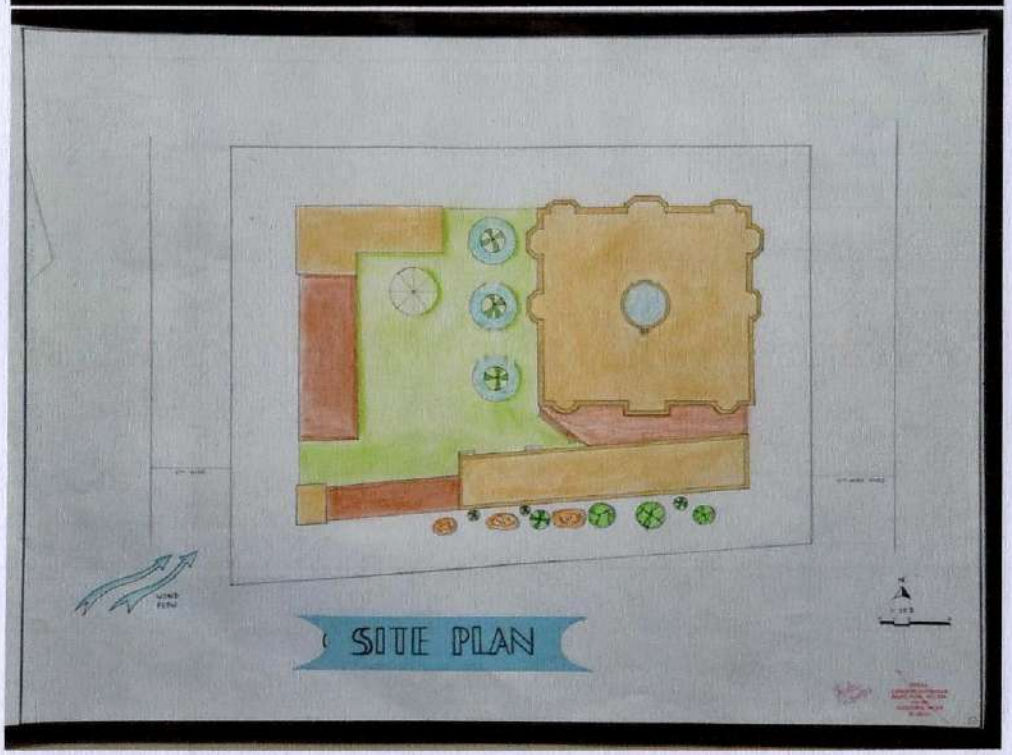

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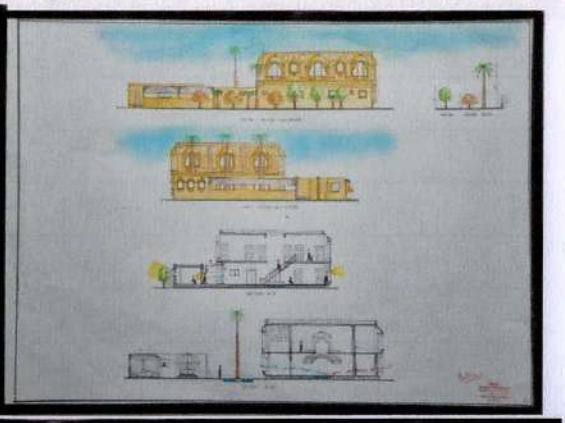

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STUDY TOUR TO DHARMASHALA AND PUNJAB REPORT

ABSTRACT

A field trip is an opportunity for students to visit sites of national significance and to study historic, contemporary and vernacular architecture. Field trips enrich student's learning through active hands on experience. Such activities enhance student's knowledge about architecture and provoke critical thinking, historic empathy and sustained interest in the subject. The study trips are mandatory and provide unique opportunities for students to explore and learn outside classrooms with exposure to real world issues in an informal interactive forum.

Pune District Education Association's College of Architecture (PDEA COA), Pune, had organized a settlement study trip to Dharamshala, Himalchal Pradesh and Punjab for T.Y.B.ARCH students from 19th Nov. to 26th Nov. 2019. The students were accompanied by faculty members, Ar. Prachi Agrawal, Ar. Rashmi Rawat, Ar. Abhijit Bhagat, and Ar. Deepali Randhe. The place of stay and the settlement study was in Mclodeganj, Dharamshala. The various aspects that the students studied were natural and built environment, socio-economic aspects, cultural and religious heritage, etc. Along with this housing typology and its materials were also studied hand in hand in detail.

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OUR JOURNEY

Our train journey began from Pune Station on 19th of November 2019 at 5:30 pm. It was a two day journey to Pathankot railway station. We reached on 21st of November at 8:30 am. We travelled by bus further to Mclodeganj, Dharamshala. We reached to our hotel by 1:00 pm.

DAY 1:

On the first day of our tour we visited the Tibetan Parliament in Exile and the Tibetan Library Works and Archives.

In our visit to the Tibetan Parliament we were informed about the constitution that runs for the Tibetan community. It acts as a major place where the decisions were made for the entire community that is spread all over the world. They also conduct annual meetings with the foreign delegates which makes decisions for the welfare of the people.

The Tibetan Library Works and Archives is nearly 50 yrs. old library. There consists a large number of books related to their culture, art, architecture, etc.

DAY 2:

Our day 2 started with a visit to the Norbulingka Institute which had a great influence of Tibetan architecture. Lemo – the guide gave us the information about the whole institute and the courses that were conducted there. The institute offers different certified courses such as carving, sculpture, stitching, Thangka painting- the painting devoted and based on the Tibetan Gods, etc. The campus also consisted a museum, a temple and a retail shop. The whole campus is designed under the concept of Avalokitesvara -their God

Next we visited Dolma Ling nunnery where we did our scheduled case study under design subject. We got to know and experience the lifestyle and philosophies of the nuns living there.

HCPA Cricket Stadium: It is famous for being the highest altitude stadium in the whole world. The Himalays in the background enhance the beauty of the stadium

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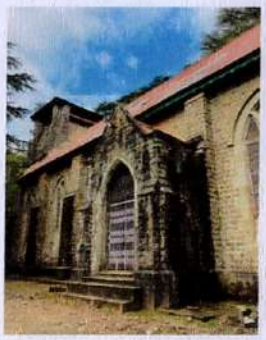
DAY 3:

our day started with visiting the Saint John's Church. It is built in the British era. It is situated in the wilderness of Mclodeganj, Dharamshala.

While proceeding towards our next destination, we made a stop to the famous tea gardens of Dharamshala. They are simply breathtaking and extremely fresh, one gets plenty of sites for photography. The drive up into the hills with tea plantation all around was really very soothing.



The next halt for the day was the Kangra Art Museum, Kangra. The museum consisted of paintings featuring their king and queen. The paintings depicted the whole month cycle in it. The museum also have different types of jewelry, traditional clothes, artifacts etc

We called it a day by visiting scenic Bhagsu Waterfall, Mclodeganj. It is just about 1km walking distance from the Bhagsu Nag temple. The waterfall added a kind of adventure in our tour. The way to the waterfall is quite adventurous as well as full of natural beauty. The beauty of nature and sound of water releases all your stresses. The water over here is so crystal clear that anyone could see through it. It was a place worth visiting.

Our Dharamshala tour ended with proceeding to our next destination of Punjab.

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Visit to Amritsar (Punjab) during 24.09.2019 to 26.09.201

OBJECTIVES

To study and appreciate the rich cultural heritage of the state.

To study the Architecture near the golden temple.



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DAY 4:

We reached Amritsar. Later on in the evening we visited the Golden Temple.

DAY 5:

Our day started with the visit to the Jallianwala Bagh. After that we again visited the golden temple and had the mouth watering Lunger.Then we made our visit to the Wagha Border. The atmosphere over there filled us with a feeling of patriotism.

DAY 6:

We did the settlement study of the lanes near the golden temple.we were divided into three groups and each of the group did the study of three different lanes.later on we did our shopping and left for the train journey to Mumbai.

Conclusion

This report gave an overview of what we learned about the culture and architecture during the study tour. We experienced the variations in the structures due to the temperature differences in both the places i.e. Dharamshala and Amritsar

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Teacher's use ICT Tools for effective Teaching learning Process

Sr.no	contents
1	ICT enabled facilities
2	List of E-content Powerpoint Presentation
3	List of Digital Data of Architectural Thesis Project
4	Use of Social Media Facebook Instagram Whatsapp groups of Class and Teachers
5	Google suite/Google classroom

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Teacher's use ICT Tools for effective Teaching learning in their dailiy academic conduct.

Following are the ICT enabled facilities in the institute.

Classroom /seminar hall	Lecture hall 1(First Year)
floor	Ground floor

Classroom /seminar hall	Lecture hall 1(Second Year)
floor	First floor

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Classroom /seminar hall	**Lecture hall 1(Third Year)**
floor	**Second floor**

Classroom /seminar hall	**Lecture hall 1(Fourth Year)**
floor	**Second floor**

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Classroom /seminar hall	Lecture hall 1(Fifth Year)
floor	Second floor

Workshop Area

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Workshop Area

Submission Room	Display Area
floor	Ground floor

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Computer Lab

Library

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2) List of E-content

PowerPoint Presentations

Teacher's use ICT Tools for effective Teaching learning process by showcasing the powerpoint presentation to students.It enhances their understanding by visually learning the concepts.

Following are the bank of presentations prepared by the teachers and available in the institutes domain:

First Year B.arch

Sem-I

No	Subject	No. of Presentation
1	Basic Design	7
2	Building Construction And Materials I	6
3	Theory Of Stuctures I	5
4	Architectural Graphics And Drawing I	4
5	History Of Architecture And Culture I	9
6	Communication Skills	6
7	Workshop I	5

Sem-II

No	Subject	No. of Presentation
1	Architectural Design I	6
2	Building Construction And Materials II	5
3	Theory Of Stuctures II	5
4	Architectural Graphics And Drawing II	3
5	History Of Architecture And Culture II	6
6	Fundamentalsof architecture	3
7	Workshop II	3

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Second Year B.arch

Sem-III

No	Subject	No. of Presentation
1	Architectural Design II	5
2	Building Construction And Materials **III**	6
3	Theory Of Stuctures III	2
4	Computer Aided Drawing and Graphics	5
5	History Of Architecture And Culture III	7
6	Building Services I	6
7	Climatology	3

Sem-IV

No	Subject	No. of Presentation
1	Architectural DesignIII	5
2	Building Construction And Materials **IV**	4
3	Theory Of Stuctures IV	5
4	Environmental Science	3
5	History Of Architecture And Culture IV	4
6	Building Services Ii	7
7	Site Survey And Analysis	1

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Third Year B.arch

Sem-V

No	Subject	No. of Presentation
1	Architectural Design IV	5
2	Building Construction And Materials V	6
3	Theory Of Stuctures V	2
4	Landscape Architecture	4
5	Elective I [Contemporary Architecture]	5
6	Building Services III	6
7	Working Drawing I	3

Sem-VI

No	Subject	No. of Presentation
1	Architectural DesignV	5
2	Building Construction And Materials VI	4
3	Theory Of Stuctures IV	5
4	Landscape Architecture	3
5	Elective I [Contemporary Architecture]	5
6	Building Services III	4
7	Working Drawing II	1

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Fourth Year B.Arch

Sem-VII

No	Subject	No. of Presentation
1	Design VII	5
2	AdvancedBuilding Technology And Services I	6
3	Professional Practice I	2
4	Urban Studies-I	4
5	Research In Architecture I	3
6	Quantity Surveying And Estimation - I	5
7	Specification Writing I	3
8	Elective II- Design & Technology Elective	4

Sem-VIII

No	Subject	No. of Presentation
1	Design VIII	5
2	AdvancedBuilding Technology And Services II	4
3	Professional Practice II	5
4	Urban Studies-II	3
5	Research In Architecture II	6
6	Quantity Surveying And Estimation - II	4
7	Specification Writing II	6
8	ElectiveIII- Allied Elective	2

Fifth Year

Sem IX

No	Subject	No. of Presentation
1	Pracctical Training	o

Sem X

No	Subject	No. of Presentation
1	Architectural Design Project	o
2	Elective IV	0

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Teacher's use ICT Tools for effective Teaching learning process

3)List of Digital Data of Architectural Thesis Project

List Of Guide Allotment				
Sr. No.	Name	Name of Thesis Topic	Guide	Asst. Guide
1	AHIR TEJAS SHIVRAM	Para-olympic training & cultural centre, Gahunje, Pune.	Ar Nishant Gawande	Ar.Swati Rode ,Ar.Susmita Pansare
2	BAGADE MAYURI SHARAD	Adhar Kendra at Shirur, Pune.	Ar Nishant Gawande	Ar.Swati Rode ,Ar.Susmita Pansare
3	DASARI YUGA RAMESH	meditation center	Ar.Prashant Gadre	Ar.Pooja Kudale, Ar.Shivali Lalbige
4	GARIBE OMKAR KAILAS	Drug Rehabilitation Center,Badlapur	Ar.Prashant Gadre	Ar.Pooja Kudale, Ar.Shivali Lalbige
5	GELOT NUTAN BHARAT	Art and design school, pashan, pune	Ar.Abhijit Bhagat	Ar.Deepali Randhe , Ar.Vishnu Suresh
6	JAGTAP LEENA VIKAS	VEDIC GURUKUL- The skills nd development institute at Pandharpur	Ar.Prashant Gadre	Ar.Pooja Kudale, Ar.Shivali Lalbige
7	KAMTHE SIDDHI SANJAY	Cancer Hospice at pune	Ar.Prashant Gadre	Ar.Pooja Kudale, Ar.Shivali Lalbige
8	KANADE ANKITA SANDIP	.....park -developed by monde Cadbury factory at manchar	Ar.Abhijit Bhagat	Ar.Deepali Randhe , Ar.Vishnu Suresh
9	KHAIRNAR SAYALI KESHAVRAO	School and Hostel Facilities For Migrant children At Nashik	Ar.Prashant Gadre	Ar.Pooja Kudale, Ar.Shivali Lalbige
10	LIMKAR ADITYA SUBHASH	FOREST TOURIST CENTRE AT RADHANAGARI	Ar Nishant Gawande	Ar.Swati Rode ,Ar.Susmita Pansare
11	MUNGSE RUTUJA RAMESH	Architect against domestic violence at markal	Ar.Abhijit Bhagat	Ar.Deepali Randhe , Ar.Vishnu Suresh
12	NIGHOJKAR PRAJWAL AVINASH	TRAUMA CARE CENTRE	Ar.Prashant Gadre	Ar.Pooja Kudale, Ar.Shivali Lalbige
13	PAKHALE POOJA RAJENDRA	Eco Tourism Center With Cultural Background, at Jawhar, palghar	Ar Nishant Gawande	Ar.Swati Rode ,Ar.Susmita Pansare
14	PARMAR SHUBHAM HARSHAD	Bussiness and education incubation centre at navimumbai	Ar Nishant Gawande	Ar.Swati Rode ,Ar.Susmita Pansare
15	PATIL NEHA NETAJI	Cancer hospital at Pune	Ar.Prashant Gadre	Ar.Pooja Kudale, Ar.Shivali Lalbige
16	PATIL SHWETA SANJAY	Residential school cums skill development centre at buldhana	Ar.Abhijit Bhagat	Ar.Deepali Randhe, Ar.Vishnu Suresh
17	POTE SAURABH BHAGWAT	ARCHITECTURAL MUSEUM	Ar.Prashant Gadre	Ar.Pooja Kudale, Ar.Shivali Lalbige
18	SHELAR BHUSHAN PRAKASH	Institute of cinematic arts	Ar Nishant Gawande	Ar.Swati Rode ,Ar.Susmita Pansare
19	SHIRVANDKAR GAYATRI MANGESH	Urban Haat	Ar.Abhijit Bhagat	Ar.Deepali Randhe , Ar.Vishnu Suresh
20	TANKSALE VAIDEHI SHRIDHAR	Tribal Residential school, Pune	Ar.Abhijit Bhagat	Ar.Deepali Randhe , Ar.Vishnu Suresh
21	THOTANGARE KIMAYA ASHOK	CULTURAL AND TOURIST HUB AT CHIKHALDARA	Ar.Abhijit Bhagat	Ar.Deepali Randhe , Ar.Vishnu Suresh
22	UBALE VAISHNAVI VINOD	bird sanctuary at bhigwan	Ar Nishant Gawande	Ar.Swati Rode ,Ar.Susmita Pansare
23	WAGHERE VISHWAJEET DNYANESHWAR	COMMERCIAL COMPLEX (IT PARK)	Ar Nishant Gawande	Ar.Swati Rode ,Ar.Susmita Pansare

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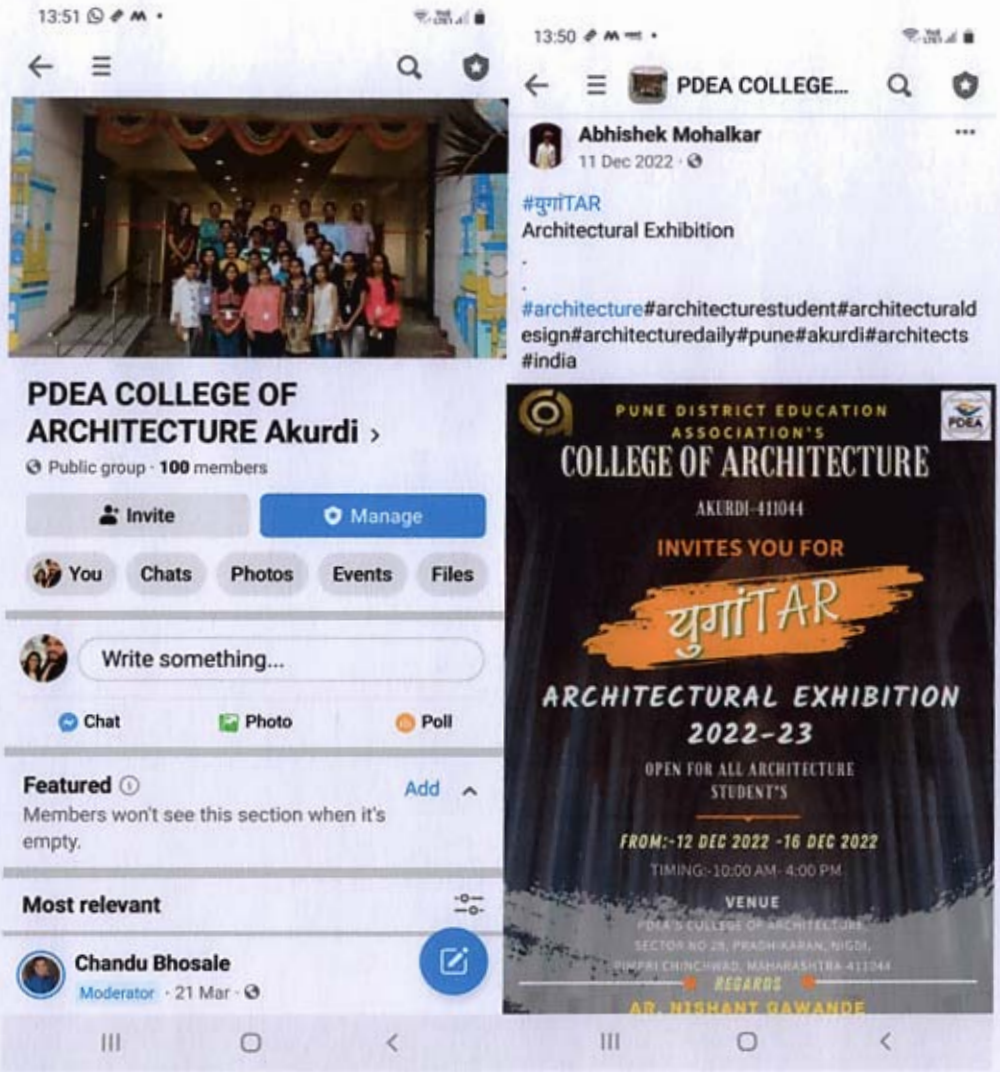
Teacher's use ICT Tools for effective Teaching learning process by use of Social Media platforms like Facebook,Instagram & whatsapp groups of class and Professors

a) Facebook



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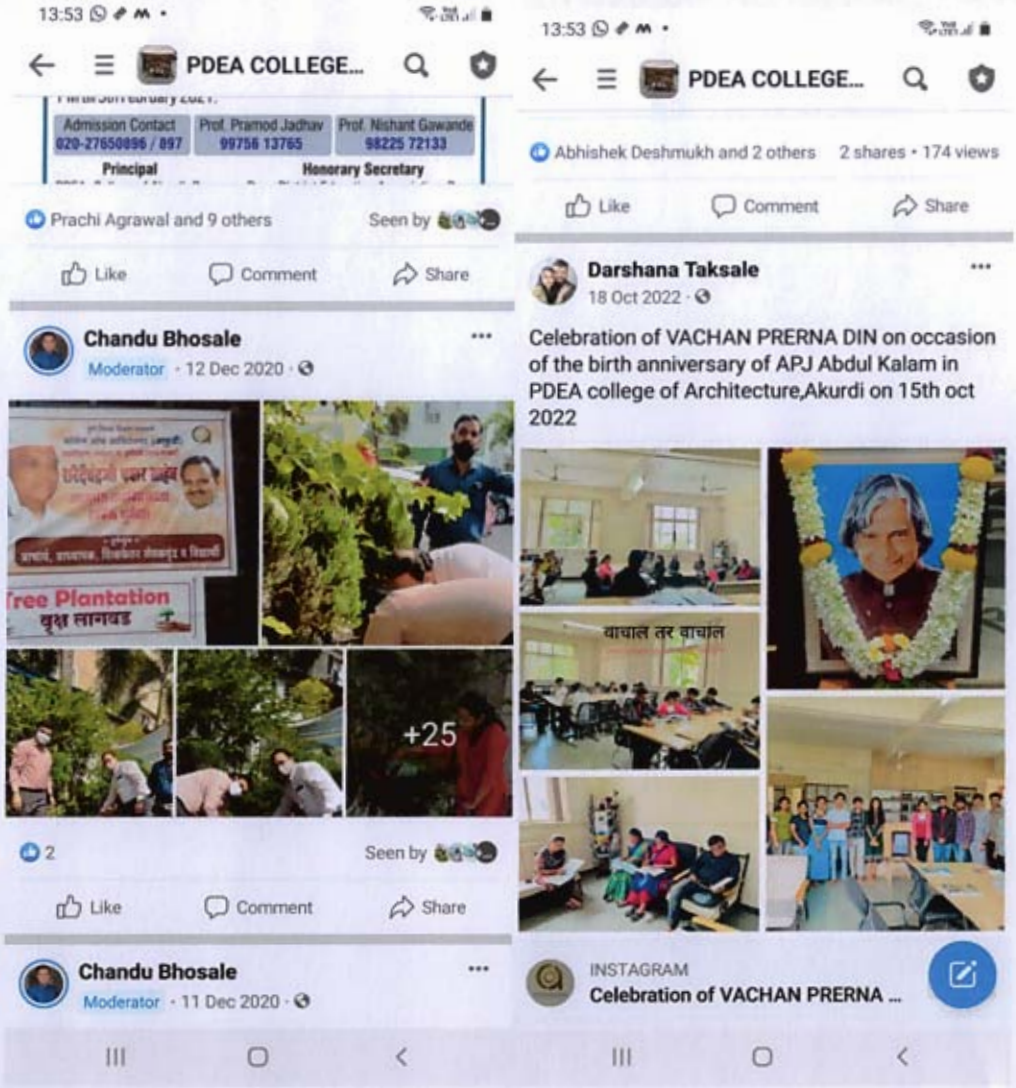

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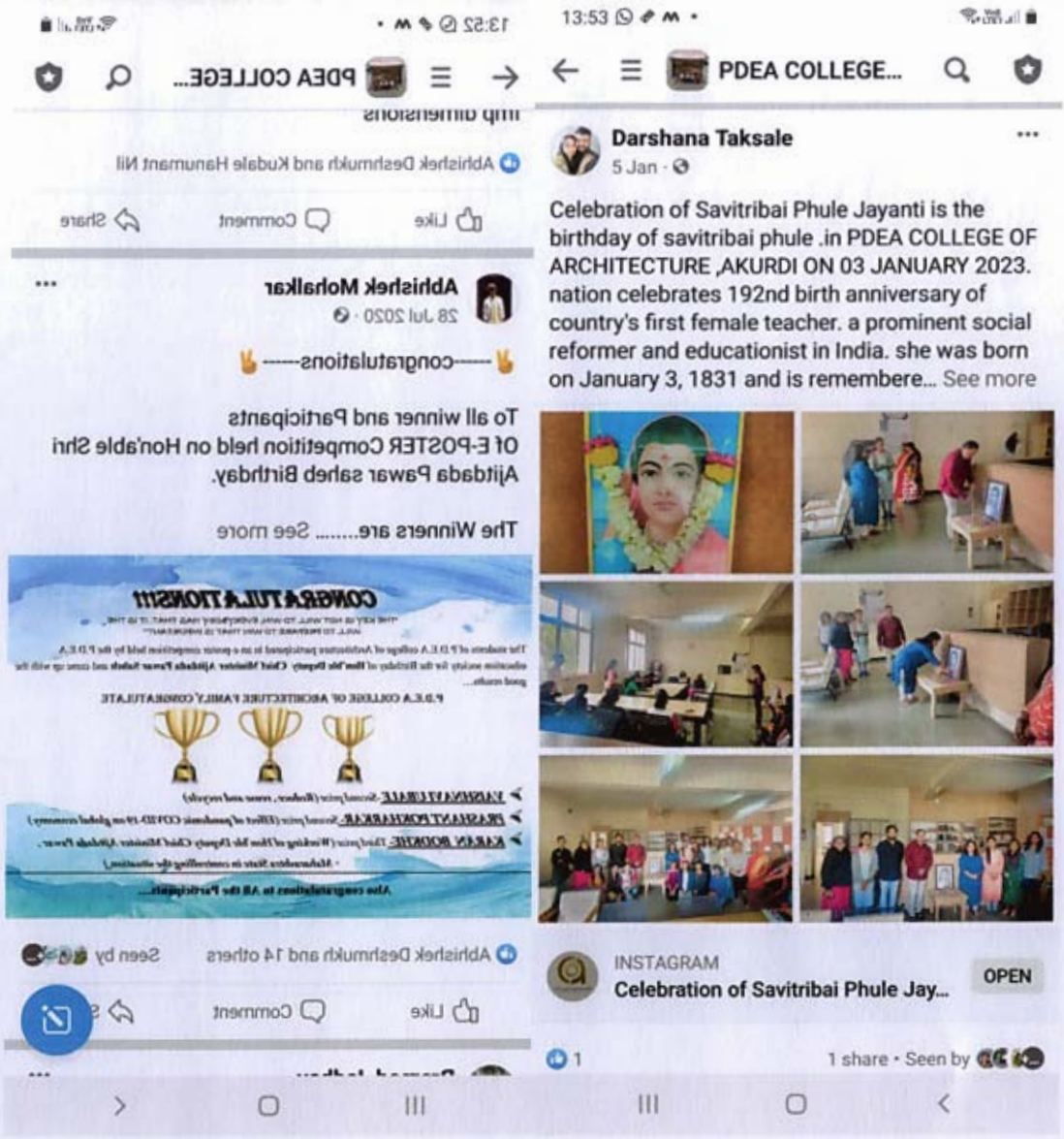

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b)Instagram

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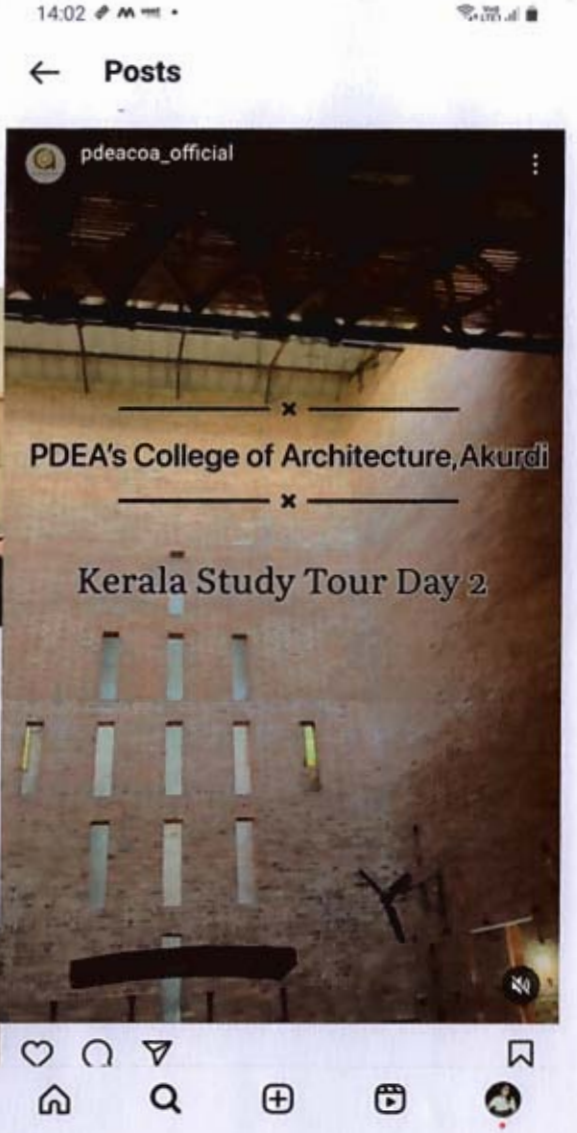

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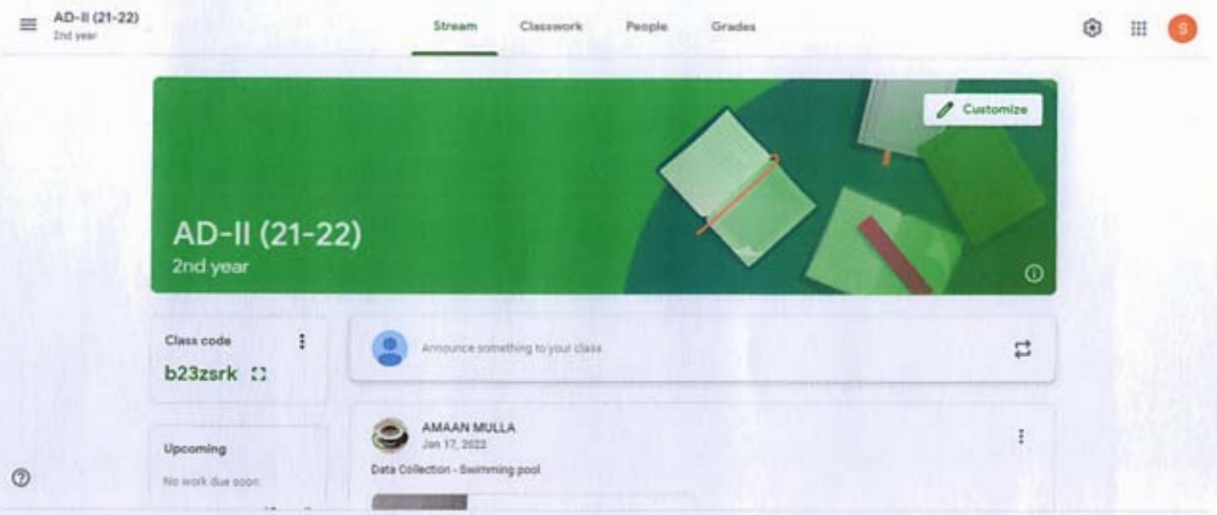

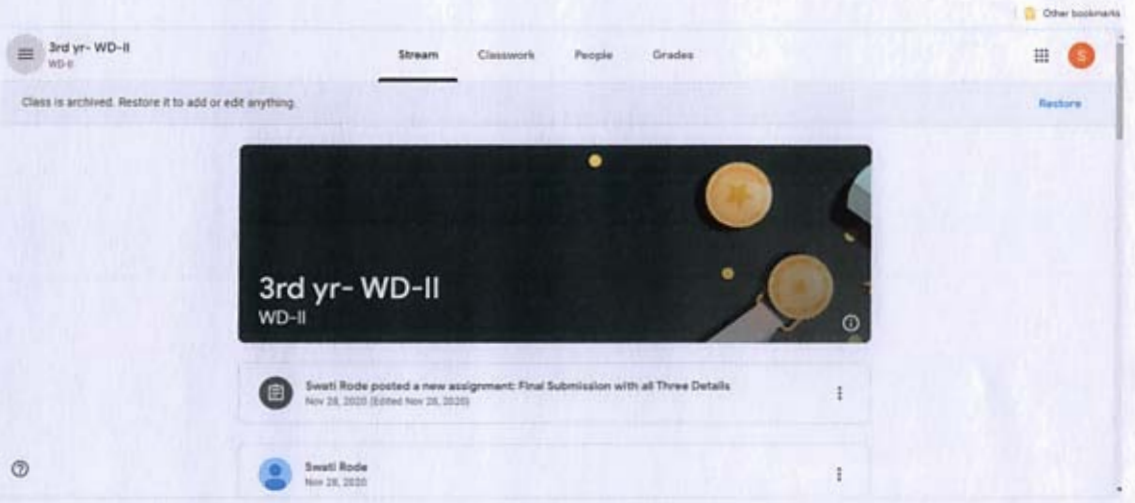

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Key Indicator – 2.3 Teaching – Learning Process

Ratio of mentor to students for academic and other related issues (Data for academic year 2021-22)

Sr.no	contents
1	List of Full Time Teachers on roll
2	List of Students
3	Mentor list
4	Mentor Mentee Allotment
5	Student - Full Time teacher ratio
6	Faculty meetings regading mentor mentee

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Ratio of mentor to students for academic and other related issues (Data for the latest completed academic year)

List of Full Time Teachers on roll

Bachelor of Architecture

Teaching Staff List

A.Y 2021-2022

Name of Faculties year wise			21-22
Sr no.	Nme of Faculties	Master Degree	Visiting
1	Ms.Anita Joshi	M.Arch	Mr.Hrishikesh Shembekar
2	Mr. Pradhumn Ghugare	M.Arch	Mr. Vishal Bafna
3	Mr.Nishant Gawande	M.Arch	Mr.Prasad Ganpule
4	Ms.Rashmi Rawat	M.Arch	
5	Ms.Prachi Agrawal	M.Arch	
6	Ms.Deepali Randhe	M.Arch	
7	Mr.Arun Sohani	M.Arch	
8	Ms.Ketaki Ashtekar	B.Arch	
9	Mr.Aniket Shendge	M.Arch	
10	Ms.Pooja Kudale	M.Arch	
11	Mr.Rakesh Mutha	M.Arch	
12	Ms.Swati Rode	B.Arch	
13	Mr.Chirag Gujar	M.Tech	
14	Mr.Abhijeet Bhagat	M.Arch	

Ratio of the mentor of students for academic and other related issues (data for A.Y 2021-2022)

First Year

ABHISHEK SANTARAM KASHID	COA-187261	04-12-21
SAHIL SUNIL GUND	COA-187262	02-12-21
ROHAN SHIVAJI JATHAR	COA-196495	20-12-21
MAHESH BALASAHEB KALE	COA-196496	20-12-21

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Second Year

AARYA VISHAL JADHAV	COA-175488	28-01-21
AMAAN ABDULAZIZ MULLA	COA-175489	15-01-21
AMEYA SACHIN KHULE	COA-175490	29-01-21
ANKITA RANJANKUMAR SINHA	COA-175491	11-01-21
GAUTAMI SANJAY ADEP	COA-175492	01-02-21
GAYATRI PRABHUDAS BAVISKAR	COA-175493	27-01-21
KAJAL BALASAHEB SONAWANE	COA-175494	28-01-21
KALYANI SUNIL GAJARE	COA-175495	29-01-21
MOSES DANIEL BHANDARI	COA-175496	02-02-21
PRAJWAL RAJESH PATIL	COA-175497	28-01-21
PRASAD PANDURANG NAGARGOJE	COA-175498	28-01-21
PRERNA PRAMOD CHICHKHEDE	COA-175499	11-01-21
RUTHVIK DATTATRAYA BENDRE	COA-175501	28-01-21
SAKSHI RAJENDRA SANGOKAR	COA-175502	15-01-21
SANKET SUNIL SAWANT	COA-175503	27-01-21
SHRUTI PRAKASH RAYAKAR	COA-175504	12-01-21
SHRUTIKA BHAUSAHEB ROKADE	COA-175505	06-01-21
SHUBAM POPAT DHUS	COA-175506	29-01-21
SIDDHI PRAKASH THIKEKAR	COA-175507	29-01-21
SIDDHI JAGANNATH PATHARE	COA-175508	29-01-21
SIDDHI UMESH MORE	COA-175509	29-01-21
SOHAM JAYDEEP KERKAR	COA-175510	28-01-21
SUSHMITA MUKUND MORE	COA-175511	12-01-21
VAISHNAV VIJAY KUMBHAR	COA-175512	28-01-21
VIJAY SADASHIV THORE	COA-175513	28-01-21
SWARAJ SANJAY KHANDAGALE	COA-182319	28-01-21
ROHAN SATPUTE		28-01-21

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Third Year

ARATI MAHESH MANJAREKAR	COA-156007	15-07-19
KARAN KAILAS BODKHE	COA-156009	30-07-19
SHREYA RAJENDRA MOKATE	COA-156012	13-08-19
SIDDHARTH MAYUR GADHAVE	COA-156013	31-07-19
VAISHNAVI VISHWANATH THORAT	COA-156014	31-07-19
RUTUJA PANDHARINATH TAWARE	COA-158472	01-08-19
ABHISHEK DATTATARY MOHALKAR	COA-183724	01-08-19
ANJALI PRABHAKAR MALAS	COA-183725	22-07-19
PRASHANT VASANTRAO POKHARKAR	COA-183727	13-08-19
RUTUJA BALASAHEB ZAGADE	COA-183728	23-07-19
SAKSHI VIJAY GHARE	COA-183729	23-07-19
DIVYA MADHUKAR PATIL	COA-134173	04-07-18

Fourth Year

POOJA MADHUKAR NALAWADE	COA-134161	14-07-18
SANKET RAMESH PASALKAR	COA-134162	06-08-18
ABHISHEK MILIND DESHMUKH	COA-134163	06-08-18
ABOLI MILIND RAUT	COA-134164	06-08-18
ADITYA SUNIL CHINTAMANI	COA-134165	10-07-18
AISHWARYA KRISHNA GUDE	COA-134166	18-07-18
AKSHAY SANTOSH LENDE	COA-134167	06-08-18
ANKITA SANTOSH KALOKHE	COA-134168	06-08-18
ANKITA PANJABRAO MODAK	COA-134169	06-08-18
ASHFAQUE MUJAHIDULLAH SHAIKH	COA-134170	07-08-18
ATHARVA RAJU KALE	COA-134171	06-08-18
DIMPLE VINAYAK KHALANE	COA-134172	06-08-18
HARSHVARDHAN UMESH MANE	COA-134174	17-07-18
ISHA SUBHASH KARANDE	COA-134175	03-07-18

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KANCHAN SATESH JADHAV	COA-134176	06-08-18
KRISHNA HIREN HIVRE	COA-134177	19-07-18
PRATIKSHA PRAKASH PUDALE	COA-134178	06-08-18
PURVA SHIRISH SHELKE	COA-134179	06-08-18
RAKSHITA PRAKASH KARALE	COA-134180	06-08-18
SAURABH SANDIP SHINDE	COA-134181	18-07-18
SHANTANU BALASAHEB SAWANT	COA-134183	17-07-18
SHIRISH DADARAO ATHAWALE	COA-134184	16-07-18
SHRADDHA MANOHAR SURVE	COA-134185	06-08-18
SHUBHAM SANJAY DHANAWADE	COA-134186	14-07-18
SIDDHI PANDIT WALKE	COA-134187	06-08-18
SONALI JALINDAR GAIKWAD	COA-134188	18-07-18
SRUSHTI BABURAO KHEDKAR	COA-134189	17-07-18
SUJAY SUHAS SHINDE	COA-134190	18-07-18
SURAJ SATISH WANI	COA-134191	18-07-18
TRUPTI DATTATRAY JADHAV	COA-134193	19-07-18
YOGESH MAHINDRA RAUT	COA-134194	06-08-18
YUVRAJ KAILASH MALVIYA	COA-134195	17-07-18
KOMAL TULSHIRAM WABALE	COA-139315	18-07-18
RENUKA LILADHAR MAGARE	COA-139316	16-07-18
SIDDHI SUNIL SALUNKHE	COA-139317	06-08-18
VENKATESH SANTOSH NAIK	COA-139318	06-08-18
AMEY LATISH BALKAWADE	COA-113343	29-08-17
SHWETA DNYANESHWAR MARAL	COA-113361	29-08-17
SRUSHTI SAYAJI DABADE	COA-113363	29-08-17
RIDDHI RAHUL THORAT	COA-113355	06-08-17

Fifth Year

ADITYA SHUBHASH LIMKAR	COA-113342	05-08-17
ANIKITA SANDIP KANADE	COA-113344	08-08-17
BHUSAHAN PRAKASH SHELAR	COA-113345	29-08-17
KIMAYA ASHOK THOTANGARE	COA-113347	06-08-17
LEENA VIKAS JAGTAP	COA-113348	29-08-17
MAYURI SHARAD BAGADE	COA-113349	05-08-17
NEHA NETAJI PATIL	COA-113350	05-08-17
NUTAN BHARAT GELOT	COA-113351	07-08-17
OMKAR KAILAS GARIBE	COA-113352	05-08-17
POOJA RAJENDRA PAKHALE	COA-113353	05-08-17
PRAJWAL AVINASH NIGHOJKAR	COA-113354	29-08-17
RUTUJA RAMESH MUNGSE	COA-113356	31-08-17
SAURABH BHAGWAT POTE	COA-113357	07-08-17

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SAYALI KESHAVRAO KHAIRNAR	COA-113358	08-08-17
SHUBHAM HARSHAD PARMAR	COA-113359	08-08-17
SHWETA SANJYA PATIL	COA-113360	07-08-17
SIDDHI SANJAY KAMTHE	COA-113362	29-08-17
TEJAS SHIVRAM AHIR	COA-113364	06-08-17
VAIDEHI SHRIDHAR TANKSALE	COA-113365	29-08-17
VAISHNAVI VINOD UBALE	COA-113366	07-08-17
VISHWAJEET DNYANESHWAR WAGHI REq	COA-113367	31-08-17
YUGA RAMESH DASARI	COA-113368	05-08-17
SHIRVANDKAR GAYATRI .		

Mentor list

Mentors			21-22
Sr no.	Nme of Faculties	Master Degree	Visiting
1	Ms.Anita Joshi	M.Arch	Mr.Hrishikesh Shembekar
2	Mr. Pradhumn Ghugare	M.Arch	Mr. Vishal Bafna
3	Mr.Nishant Gawande	M.Arch	Mr.Prasad Ganpule
4	Ms.Rashmi Rawat	M.Arch	
5	Ms.Prachi Agrawal	M.Arch	
6	Ms.Deepali Randhe	M.Arch	
7	Mr.Arun Sohani	M.Arch	
8	Ms.Ketaki Ashtekar	B.Arch	
9	Mr.Aniket Shendge	M.Arch	
10	Ms.Pooja Kudale	M.Arch	
11	Mr.Rakesh Mutha	M.Arch	
12	Ms.Swati Rode	B.Arch	
13	Mr.Chirag Gujar	M.Tech	
14	Mr.Abhijeet Bhagat	M.Arch	

Announcement of Mentor list to students

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12-08-2021

NOTICE

Hereby all the students ore informed obout the Mentor-Mentee system to be implemented in the institute from the Academic year 2021-22. Students will be informed obout the Mentor-Mentee meetings from time to time ond it is mondotory for them to attend the said meetings. Please find herewith the list of allotted Mentor-Mentees for A.y. 2021-22.

Principal

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Principal
PDEA
College of Architecture,
Akurdi, Pune - 411 044.

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MENTOR.MENTEE AllOTMENT FOR A.Y. 2021.22:

Mentor Name: Mr. Pradhumn Ghugare

Sr	First Year	Second Year	Third Year	Fourth Year	Fifth Year
1	Mahesh balasaheb kale	Rohan Satpute	Divya Madhukar Patil	Riddhi Rahul Thorat	
2		Swaraj Sanjay Khandagale	Sakshi Vijay Ghare	Srushti Sayaji Dabade	
3				Ankita Panjabrao Modak	

Mentor Name: Mr.Nishant Gawande

Sr	First Year	Second Year	Third Year	Fourth Year	Fifth Year
1	Rohan Shivaji Jathar	Vijay Sadashiv Thore	Rutuja Balasaheb Zagade	Shweta Dnyaneshwar Maral	
2		Vaishnav Vijay Kumbhar	Prashant Vasantrao Pokharkar	Amey Latish Balkawade	
3				Atharva Raju Kale	

Mentor Name: Ms.Rashmi Rawat

Sr	First Year	Second Year	Third Year	Fourth Year	Fifth Year
1	sahil sunil gund	Sushmita Mukund More	Anjali Prabhakar Malas	Venkatesh Santosh Naik	
2		soham jaydeep kerkar	Abhishek Dattatary Mohalkar	Siddhi Sunil Salunkhe	
3				Ashfaque Mujahidullah Shaikh	

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Ph. 020-27650896, 27650897 Email. : pdeacoa@gmail.com Web. : www.pdeacoa.edu.in

Mentor Name: Ms.Prachi Agrawal

Sr	First Year	Second Year	Third Year	Fourth Year	Fifth Year
1	Abhishek Santaram Kashid	Siddhi Umesh More	Rutuja Pandharinath Taware	Renuka Liladhar Magare	
2		Siddhi Jagannath Pathare	Vaishnavi Vishwanath Thorat	Komal Tulshiram Wabale	
3				Ankita Santosh Kalokhe	

Mentor Name: Ms.Deepali Randhe

Sr	First Year	Second Year	Third Year	Fourth Year	Fifth Year
1		Siddhi Prakash Thikekar	Siddharth Mayur Gadhave	Yuvraj Kailash Malviya	
2		Shubam Popat Dhus	Shreya Rajendra Mokate	Yogesh Mahindra Raut	
3				Akshay Santosh Lende	
				Aditya Sunil Chintamani	

Mentor Name: Mr.Arun Sohani

Sr	First Year	Second Year	Third Year	Fourth Year	Fifth Year
1		Shrutika Bhausaheb Rokade	Karan Kailas Bodkhe	Trupti Dattatray Jadhav	
2		Shruti Prakash Rayakar	Arati Mahesh Manjarekar	Suraj Satish Wani	
3				Aboli Milind Raut	
				Abhishek Milind Deshmukh	

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Mentor Name: Ms.Ketaki Ashtekar

Sr	First Year	Second Year	Third Year	Fourth Year	Fifth Year
1		Sanket Sunil Sawant		Sujay Suhas Shinde	Shirvandkar Gayatri .
2		Sakshi Rajendra Sangokar		Srushti Baburao Khedkar	Yuga Ramesh Dasari
3				Sanket Ramesh Pasalkar	Vishwajeet Dnyaneshwar Waghire

Mentor Name: Mr.Aniket Shendge

Sr	First Year	Second Year	Third Year	Fourth Year	Fifth Year
1		Ruthvik Dattatraya Bendre		Sonali Jalindar Gaikwad	Vaishnavi Vinod Ubale
2		Prerna Pramod Chichkhede		Siddhi Pandit Walke	Vaidehi Shridhar Tanksale
3				Dimple Vinayak Khalane	Tejas Shivram Ahir
				Pooja Madhukar Nalawade	

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Mentor Name: Ms.Pooja Kudale

Sr	First Year	Second Year	Third Year	Fourth Year	Fifth Year
1		Prasad Pandurang Nagargoje		Shubham Sanjay Dhanawade	Siddhi Sanjay Kamthe
2		Prajwal Rajesh Patil		Shraddha Manohar Surve	Shweta Sanjya Patil
3				Aishwarya Krishna Gude	Shubham Harshad Parmar

Mentor Name: Mr.Rakesh Mutha

Sr	First Year	Second Year	Third Year	Fourth Year	Fifth Year
1		Moses Daniel Bhandari		Shirish Dadarao Athawale	Sayali Keshavrao Khairnar
2		Kalyani Sunil Gajare		Shantanu Balasaheb Sawant	Saurabh Bhagwat Pote
3					Rutuja Ramesh Mungse
					Prajwal Avinash Nighojkar

Mentor Name: Ms.Swati Rode

Sr	First Year	Second Year	Third Year	Fourth Year	Fifth Year
1		Kajal Balasaheb Sonawane		Saurabh Sandip Shinde	Pooja Rajendra Pakhale
2		Gayatri Prabhudas Baviskar		Rakshita Prakash Karale	Omkar Kailas Garibe
3					Nutan Bharat Gelot
					Neha Netaji Patil
					Aditya Shubhash Limkar

Mentor Name: Mr.Chirag Gujar

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Sr	First Year	Second Year	Third Year	Fourth Year	Fifth Year
1		Gautami Sanjay Adep		Purva Shirish Shelke	Mayuri Sharad Bagade
2		Ankita Ranjan kumar Sinha		Pratiksha Prakash Pudale	Leena Vikas Jagtap
3				Harshvardhan Umesh Mane	Kimaya Ashok Thotangare

Mentor Name: Mr.Abhijeet Bhagat

Sr	First Year	Second Year	Third Year	Fourth Year	Fifth Year
1		Ameya Sachin Khule		Krishna Hiren Hivre	Bhusahan Prakash Shelar
2		Amaan Abdulaziz Mulla		Kanchan Satesh Jadhav	Anikita Sandip Kanade
3		Aarya Vishal Jadhav		Isha Subhash Karande	

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Student - Full Time teacher ratio (Data for lhe latest compleled Academic Year) Academic Year

Totol no. of students enrolled in the lnstitution = **106**

Totol no. of full-time teachers in the lnstitution = **13** (Except Principal)

Formula :

Students:teachers

106:13

Ratio =1:8

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NOTICE 17-09-2021

All the faculty members are requested to remain present for a Mentor Meeting on Friday, 19/09/2021

- Discussion regarding mentoring system .
- Roles ond responsibilities of mentor ond mentees
- Discussion regording mentor mentee report formot

Principal
PDEA
College of Architecture,
Akurdi, Pune - 411 044.

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Sector-28, Pradhikaran, Akurdi, Pune, Maharashtra 411044

TEACHER GUARDIAN FORM-A.Y.- 2022-23

Personal Data Sheet

Photo

PRN No. _____ Class _____ Roll No. _____

1. Name of Student: _____
2. Aadhar Card No. : _____
3. Father's Name (Full) : _____
4. Mother's Name (Full) _____
5. Father's Permanent Address: _____

   _____

   District: _____ State: - _____ Pin Code: _____

   Mobile No. of Father: _____ Mobile No. of Mother: _____

   Annual Income: _____

6. Student Local Address: _____

   District: _____ State: - _____ Pin Code: _____

   Mobile No. of Student: _____ E-mail Id _____ Blood Group: _____

7. Year of Admission:

1st Yr.	2nd Yr	3rd Yr.	4th Yr.	5th Yr.

8. Academic Record:

Sr. No.	Name of Exam	All Cleared Exam		ATKT Exam			Failed Exam		
		Year	Exam %	Exam %		No. of Subject Passed	Exam %		No. of Subject Passed
				Summer	Winter		Summer	Winter	
1.	H.S.C./Diploma								
2.	1st Yr. SEM I								
3.	1st Yr. SEM-II								
4.	2nd Yr. SEM-I								
5.	2nd Yr. SEM-II								
6.	3rd Yr. SEM-I								
7.	3rd Yr. SEM-II								
8.	4th Yr. SEM-I								
9.	4th Yr. SEM-II								
10.	5th Yr. SEM-I								
11.	5th Yr. SEM-II								

PDEA's College Of Architecture

9. Interested Sports: _____

_____

Representation (Local / State / National): _____

_____

_____

10. Hobbies: _____

11. Fees Payment Details: Total Fees Payable: _____

Sr. No.	Fees Paid	Receipt No.	Date of Receipt	Due Amount	Student Sign	Sign of TGS
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

12. Other Fees Payment Details (Except Tuition Fees) :

Sr. No.	Other Fees Paid	Receipt No.	Date of Receipt	Due Amount	Student Sign	Sign of TGS
1.						
2.						
3.						
4.						
5.						
6.						
7.						

13. Notable Achievements: _____

_____

Signature of Student

Name & Signature of Teacher Guardian

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