



SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

Accredited "A" Grade by NAAC | 12B Status by UGC | Approved by AICTE

www.sathyabama.ac.in

**SCHOOL OF BUILDING AND ENVIRONMENT
DEPARTMENT OF ARCHITECTURE
M. Arch. (Sustainable Architecture)**

**PROFESSIONAL TRAINING (S89APT)
JUL 2022 - AUG 2022**

Name of the Student : Sara Mary John

Semester : III

Reg No. : 41890016

Batch : 2021-2023



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DEPARTMENT OF ARCHITECTURE
M. Arch (Sustainable Architecture)

BONAFIDE CERTIFICATE

This is to certify that the Professional Training Report (S89APT) is the work of **SARA MARY JOHN** who had undergone training in **GAGGLE ARCHITECTS KOCHI.** and has been monitored by continuous assessment during **Jul 2022 to Aug 2022.**

DR. DEVYANI GANGOPADHYAY
HOD AND DEAN

Submitted for Viva voce Examination held on 22 December 2022

Internal Examiner

External Examiner



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DECLARATION

I, **SARA MARY JOHN** hereby declare that this Professional Training Report **JULY 11TH, 2022 TO AUGUST 18TH, 2022** done by me under the guidance of **AR. RONSON RAJAN** is submitted in partial fulfillment of the requirements for the completion of practical training session.

DATE : 18th August, 2022

PLACE : Chennai

SIGNATURE OF CANDIDATE

ACKNOWLEDGEMENT

I am pleased to acknowledge my sincere thanks to Board of Management of **SATHYABAMA INSTITUTE OF SCIENCE & TECHNOLOGY** for their kind encouragement in doing my professional training and for completing it successfully. I am grateful to them.

I convey my thanks to **Dr. Devyani Gangopadhyay**, Dean and Head of the Department, School of Building and Environment, Department of **Architecture** for providing me necessary support and details at the right time during the progressive training period.

I would like to express my sincere and deep sense of gratitude to **Ar. Ronson Rajan of Gaggle Architects, Kochi** for his valuable guidance, suggestions and constant encouragement paved way for the successful completion of my Training.

I would also like to express my sincere thanks to **Ar. Catherine Selvaraj** (Internal Co-ordinator) for her valuable guidance, during the entire Professional Training period.

I wish to express my thanks to all Teaching and Non-teaching staff members of the Department of Architecture who were helpful in many ways for the completion of the professional training.

Also, thanks to **Ar. RONSON RAJAN/ GAGGLE ARCHITECTS, KOCHI**

WORK DIARY

NAME: Sara Mary John

INTERNSHIP FIRM: GAGGLE ARCHITECTS

DURATION: 11th July, 2022 to 18th August, 2022 (32 days)

<u>DAY</u>	<u>PROJECT</u>	<u>WORK DONE</u>
(11/7/2022)	Believe Residence	Drafting-Plan (completion)
(12/7/2022)	Believe Residence	Drafting-Plan (completion)
(13/7/2022)	Believe Residence	Drafting-Plan (completion)
(14/7/2022)	Believe Residence	Drafting-Plan (completion)
(15/7/2022)	Believe Residence	Landscape
6 - (16/7/2022)	Believe Residence	Landscape
7 - (18/7/2022)	Believe Residence	Landscape
8 - (19/7/2022)	Believe Residence	3-D
9 - (20/7/2022)	Believe Residence	3-D
	Believe Residence	3-D
10 - (21/7/2022)	Believe Residence	3-D
	Believe Residence	3-D
11 - (22/7/2022)	Hands own workshop	workshop
12 - (25/7/2022)	Hands own workshop	workshop
13 - (26/7/2022)	Hands own workshop	workshop
14 - (27/7/2022)	Residence for Mr George Varghese	View
15 - (28/7/2022)	Residence for Mr George Varghese	View
16 - (29/7/2022)	Residence for Mr George Varghese	View
17 - (30/7/2022)	Residence for Mr George Varghese	View
18 - (1/8/2022)	Residence for Mr George Varghese	View
19 - (2/8/2022)	Believe Residence	Site visit
20 - (3/8/2022)	Believe Residence	Site visit
21 - (4/8/2022)	Believe Residence	Site visit
22 - (5/8/2022)	Residence for Mr George Varghese	Drafting -Plan
23 - (6/8/2022)	Residence for Mr George Varghese	Drafting -Plan
24 - (8/8/2022)	Residence for Mr George Varghese	Drafting -Plan
25 - (9/8/2022)	Believe Residence	Formit Analysis
26 - (10/8/2022)	Believe Residence	Formit Analysis
27 - (11/8/2022)	Believe Residence	Formit Analysis
28 - (12/8/2022)	Believe Residence	ECBC Calculation
29 - (13/8/2022)	Believe Residence	ECBC Calculation
30 - (16/8/2022)	Believe Residence	ECBC Calculation
31 - (17/8/2022)	Believe Residence	ECBC Calculation
32 - (18/8/2022)	Believe Residence	ECBC Calculation

SCHOOL OF BUILDING & ENVIRONMENT, DEPARTMENT OF ARCHITECTURE
M. Arch (Sustainable Architecture) Batch 2021-2023
Continuous Assessment Report for Professional training

(Continuous progress report of the trainee architect/Project Manager for the period of 15 working days in the office to be submitted to HOD)

1. Name of the office / organization :	GAGGLE architects
2. Address & Contact Number :	G-296, Panampally Nagar, Kuchi, 9946420648
3. Name of the student :	SARA MARY JOHN
4. Duration :	From 11 th July To 18 th August
5. Total No. of days :	32
6. Evaluation of Performance criteria shall be on	

* Note: Kindly grade the student as per his/her overall performance in the office during the assessment month;

Description of works	Excellent	Good	Fair	Poor	NA
Understanding of office culture		B			
Skillsets related to project management	A				
Design Management		B			
Understanding the Triple Constraints		B			
Observation during Site Visits	A				
Understanding of construction details	A				
Understanding of Construction sequences	A				
Site Supervision / Discussion with clients		B			
Adherence to Time schedule	A				
Quantitative aptitude		B			
Documentation skills	A				
Coordination with other consultants	A				

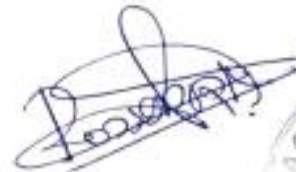
Overall Grading*

(A – 8.0, B – 7.0, C – 6.0, D – 5.5, E – 5.0, F – <5)

7. Any other Remarks :

Committed and hardworking.

8. Signature of the
Head of the Office /
Organization (With Seal)




SCHOOL OF BUILDING & ENVIRONMENT, DEPARTMENT OF ARCHITECTURE
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1. Name of the office / organization :	GAGGLE architects
2. Address & Contact Number :	G-296, Panampally Nagar, Kuchi, 9946420648
3. Name of the student :	SARA MARY JOHN
4. Duration :	From 18 th August To 28 th August
5. Total No. of days :	32
6. Evaluation of Performance criteria shall be on	

* Note: Kindly grade the student as per his/her overall performance in the office during the assessment month;

Description of works	Excellent	Good	Fair	Poor	NA
Understanding of office culture		B			
Skillsets related to project management	A				
Design Management		B			
Understanding the Triple Constraints		B			
Observation during Site Visits	A				
Understanding of construction details	A				
Understanding of Construction sequences	A				
Site Supervision / Discussion with clients		B			
Adherence to Time schedule	A				
Quantitative aptitude		B			
Documentation skills	A				
Coordination with other consultants	A				

Overall Grading*

(A – 8.0, B – 7.0, C – 6.0, D – 5.5, E – 5.0, F – <5)

7. Any other Remarks :

Committed and hardworking.

8. Signature of the
Head of the Office /
Organization (With Seal)






GAGGLE
architects

Ref No: GGG-105-2022

09th July 2022

JOINING LETTER

This is to certify that **Ms. SARA MARY JOHN**, a student of Sathyabama Institute of Science and Technology, has joined our studio GAGGLE architects, Panampilly Nagar, Cochin on **11th July 2021** as part of her practical training.



RONSON RAJAN KOSHY
B.Arch, M.Arch
CA/2017/82158

Sincerely,

Ar. Ronson Rajan Koshy
B.arch, M.arch (Environmental Architecture)
COA, AIIA, IGBC AP, GEM CP
Ph no: +91 9946420648, +91 7558973454

Principal Architect
GAGGLE architects



ARCHITECTURE INTERIOR LANDSCAPE

GAGGLE architects, G-296, Kaniyathara, Panampilly Nagar, Cochin, Kerala, INDIA
Pin:682036 email: gagglearchitects.in@gmailcom Ph:09946420648, 07558973454



GAGGLE
architects

Ref No: GCL-107-2022

29th August 2022

INTERNSHIP COMPLETION LETTER

This is to certify that **Ms. Sara Mary John (Reg No: 41890016)**, a student of Sathyabama Institute of Science and technology, Chennai underwent practical training in our studio for a period of **32 working days from 11th July 2022 to 18th August 2022**

During this short period, she has worked on sustainable projects and involved in design development, preparation of working drawings, service drawings, presentation, 3d modelling, documentation etc. We have found her to be enthusiastic, hardworking and sincere. Her performance and contribution to the projects she worked on were commendable.

We were glad to have her in our studio and we wish her all the success in her future endeavors.



RONSON RAJAN KOSHY
B.Arch, M.Arch
CA/2017/82158

Sincerely,

Ar. Ronson Rajan Koshy
B.arch, M.arch (Environmental Architecture)
COA, AIIA, IGBC AP, GEM CP
Ph no: +91 9946420648, +91 7558973454

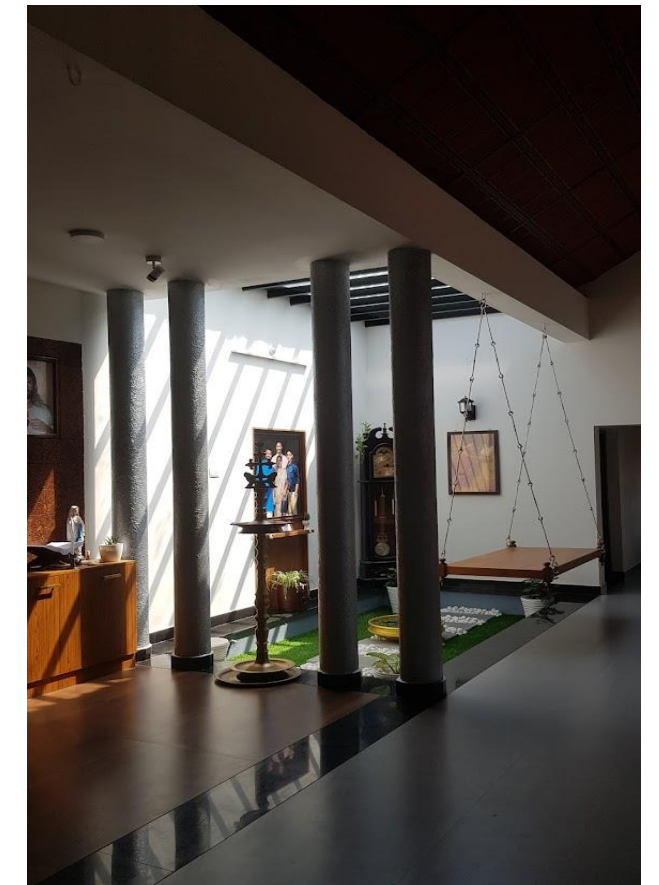
Principal Architect
GAGGLE architects



ARCHITECTURE INTERIOR LANDSCAPE

GAGGLE architects, G-296, Kaniyathara, Panampilly Nagar, Cochin, Kerala, INDIA
Pin:682036 email: gagglearchitects.in@gmailcom Ph:09946420648, 07558973454

Our Principals play leadership roles in every project, holding extensive personal interactions with the client and project staff, ensuring a better design outcome. The firm consists of professional staffs, technical. They work with a group of experts in different fields of engineering like structural, electrical, fire & building management, landscaping and green building consultants in order to provide complete project output to our clients. Also the firm is working towards sustainable and vernacular aspects and working on natural materials.



Project Brief : This residence is giving more importance to light and ventilation as *passive strategies*. There is courtyard in the centre of the house which is near to the dining hall which provides sufficient light and air inside the house making it comfortable for the people living inside. Also the site is not altered too much the slope is maintained as such. The house also has clerestory windows on top for stack effect to happen.





Site location : Pathanamthitta

Project Typology :Residence

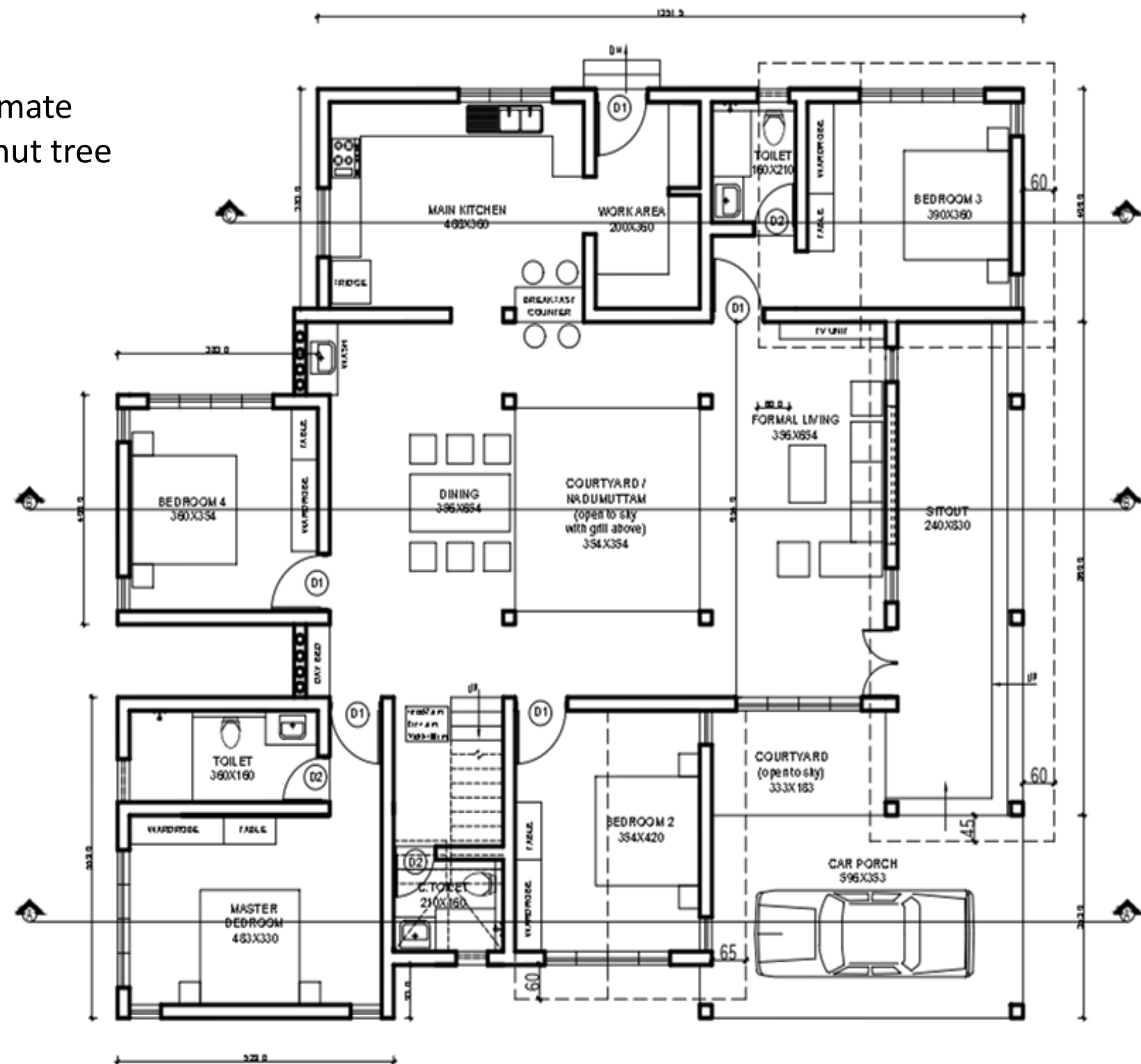
Climatic condition: Warm humid ,Tropical climate

Vegetation : Mango tree,Tamrind tree, Coconut tree

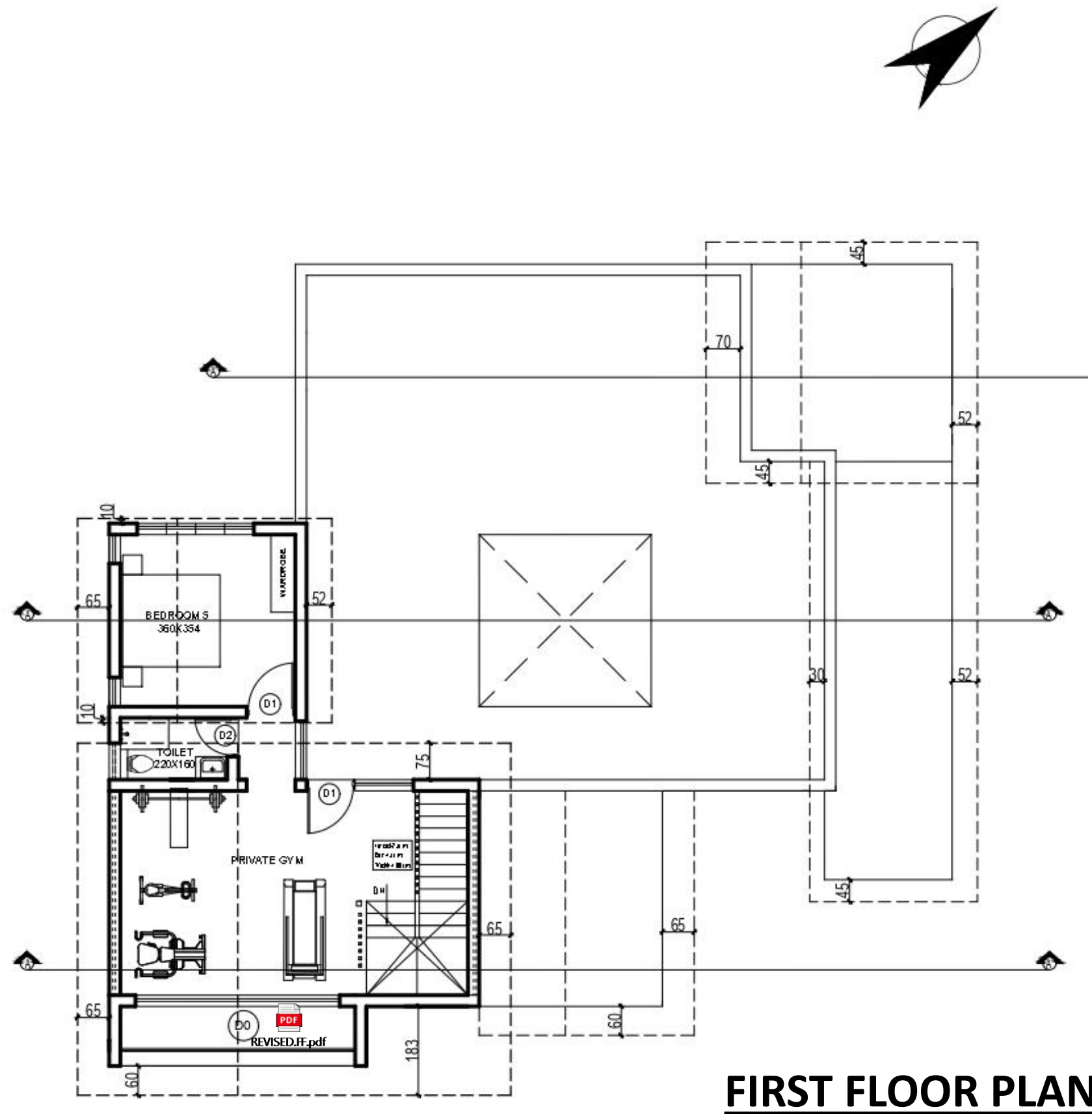
Soil condition: Laterite soil

GROUND FLOOR PLAN

- 1.CAR PORCH
- 2.DINING HALL
- 3.BEDROOM 1
- 4.MASTER BEDROOM
- 5.BEDROOM 2
- 6.BEDROOM 3
7. BEDROOM 4
- 8.FORMAL LIVING
- 9.COURTYARD 1
- 10.MAIN KITCHEN
- 11.WORK AREA
- 12.TOILETS
- 13.COURTYARD 2
- 14.SITOUT



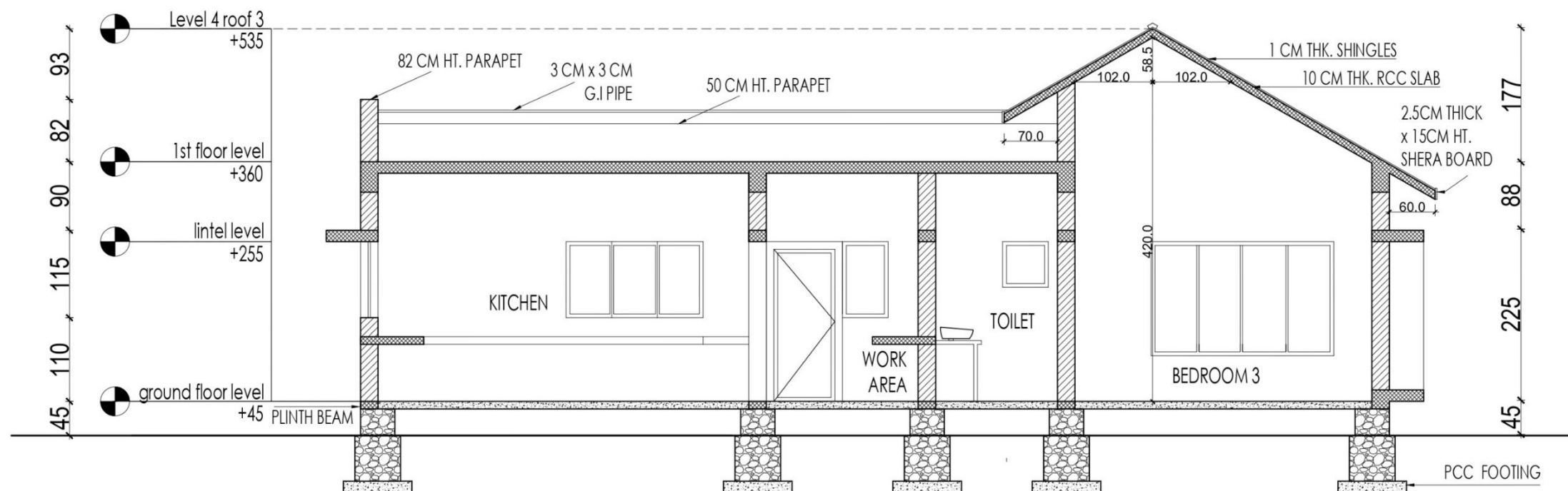
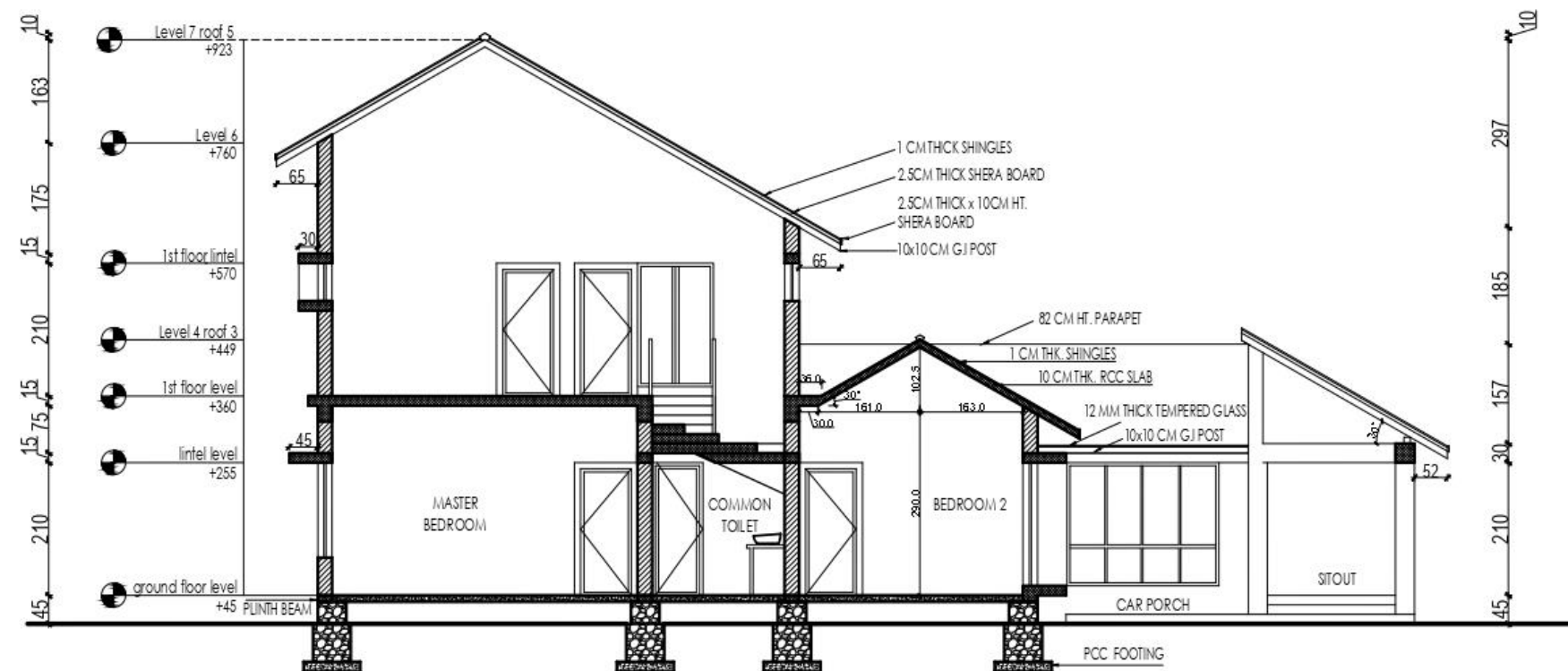
GROUND FLOOR PLAN

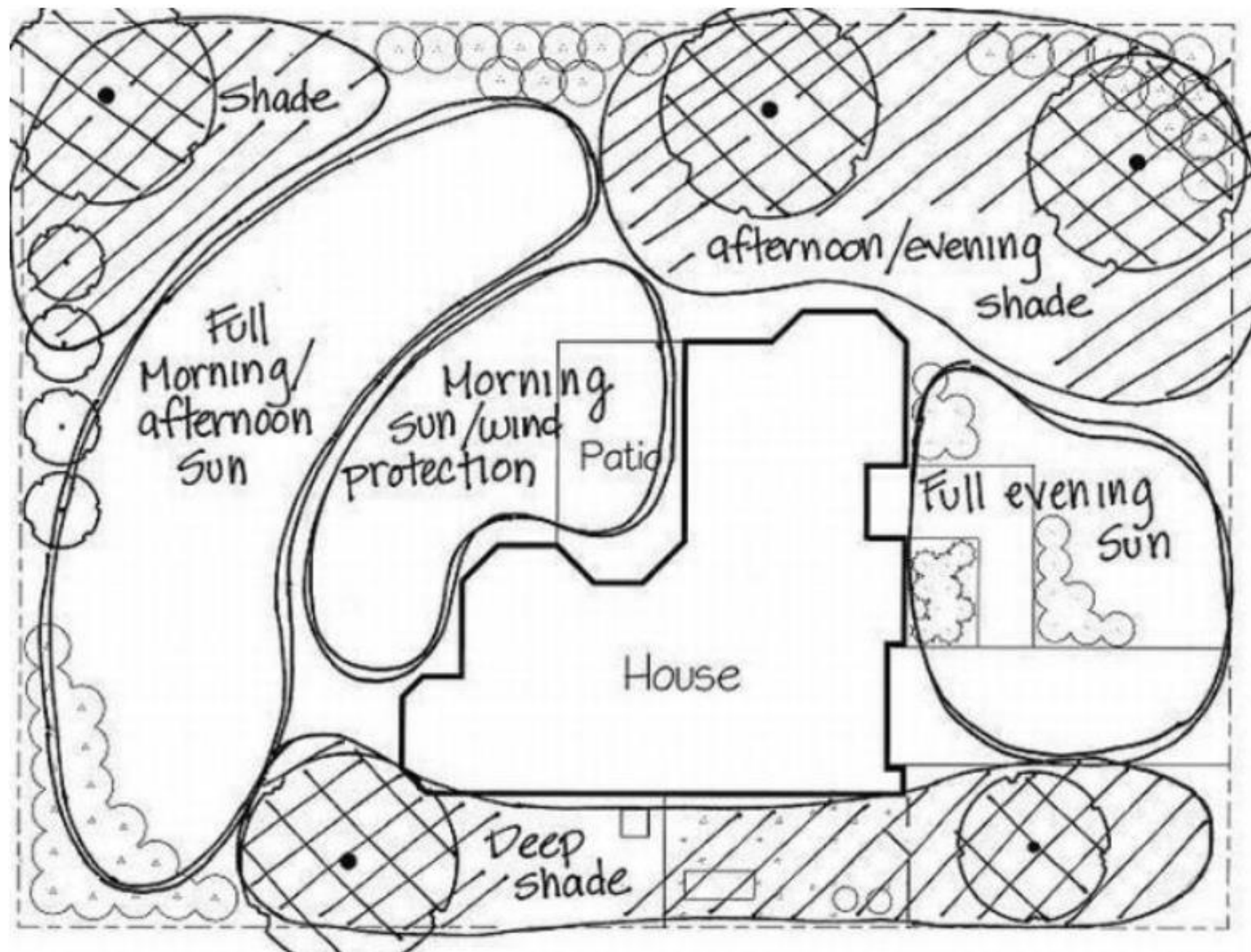


FIRST FLOOR PLAN

- 1.BEDROOM 5
- 2.PRIVATE GYM
- 3.TERRACE

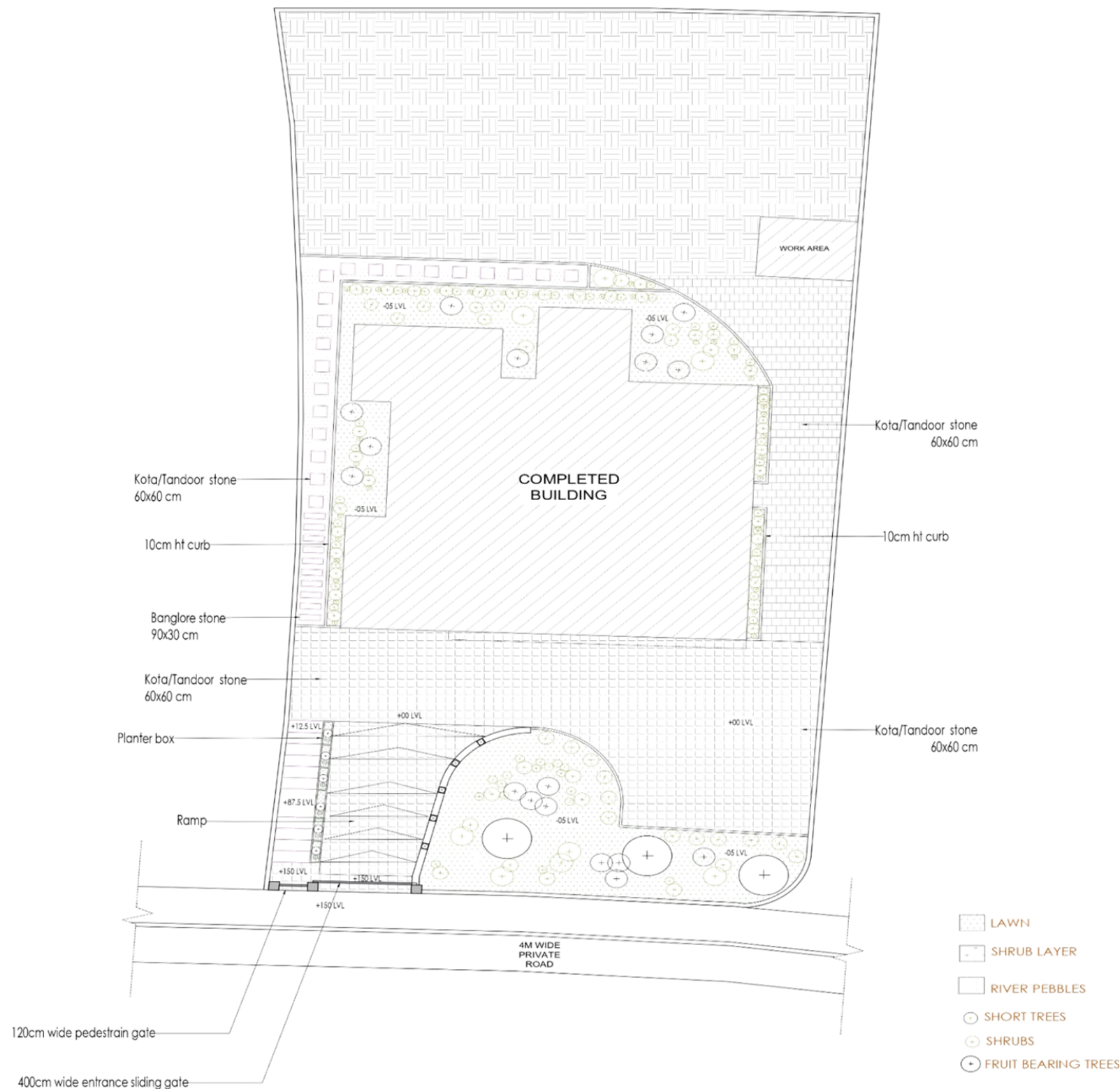
SECTIONS - BELIEVE RESIDENCE





Climate concerns begin with temperature: plants must be able to survive the average high and, most importantly, the average low temperatures for the region.

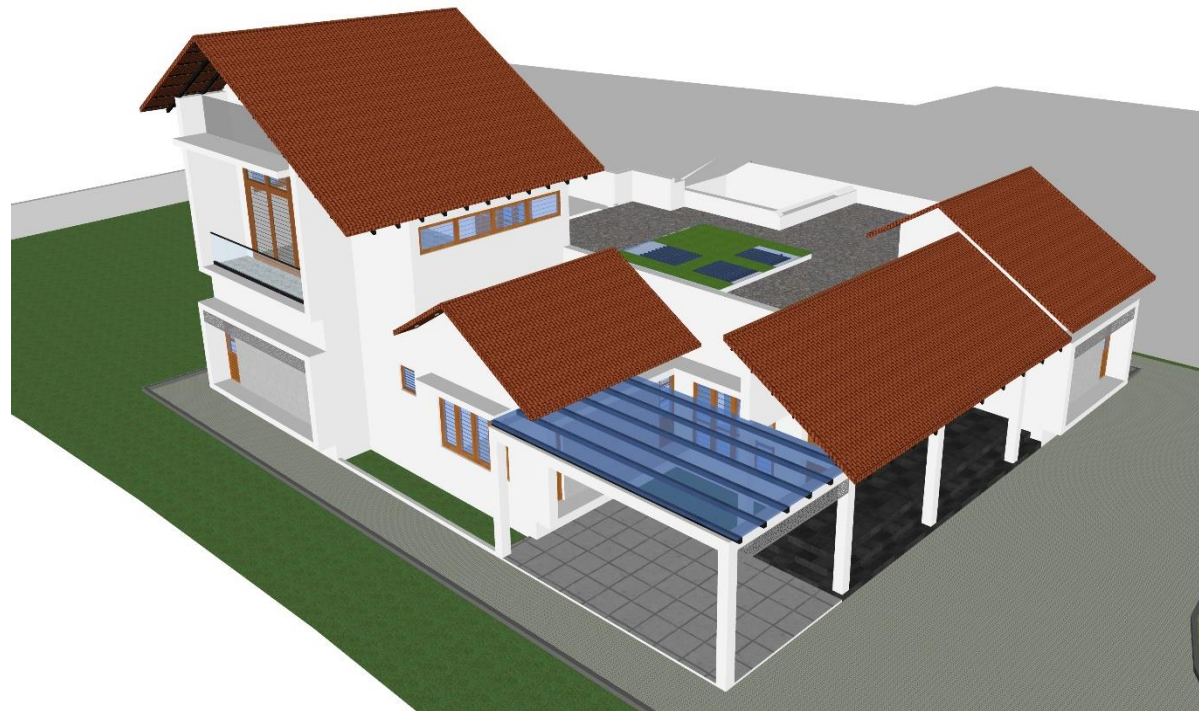
Sun/shade patterns, the amount and length of exposure to sun or shade



LANDSCAPE DESIGN PROCESS :

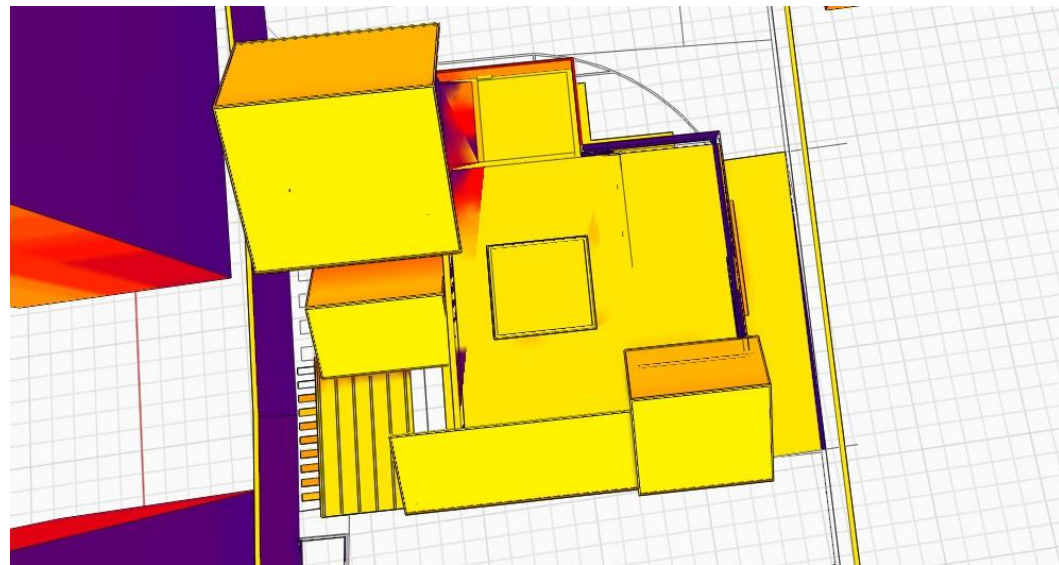
1. The five steps of the design process include: 1) conducting a site inventory and analysis, 2) determining your needs, 3) creating functional diagrams, 4) developing conceptual design plans, and 5) drawing a final design plan.
2. The first three steps establish the aesthetic, functional, and horticultural requirements for the design. The last two steps then apply those requirements to the creation of the final landscape plan.
3. The process begins with a site inventory and analysis of soil, drainage, climate conditions, and existing vegetation. This is a critical step for both plant selection and placement and locating family activities and functions.
4. Climate conditions that affect the plants are considered—temperature, humidity, rain, wind, and sunlight—also affect you, the user. The next step is to make a list of your needs and desires—this helps you determine how your yard and landscape will be used.
5. The site and user analyses will also help you establish a theme for the form and style of your design. The functional diagram is then used to locate the activity spaces on the site and from this diagram a conceptual plan is developed.
6. The last step is a final design that includes all the hardscape and planting details that are necessary for installation. Throughout the design process there are ten important things to consider

3D VIEW OPTION 1 - BELIEVE RESIDENCE

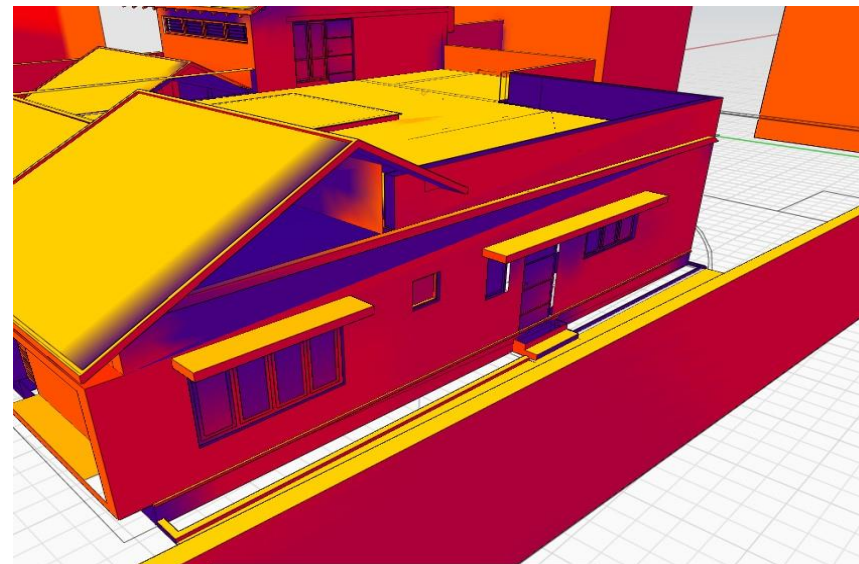




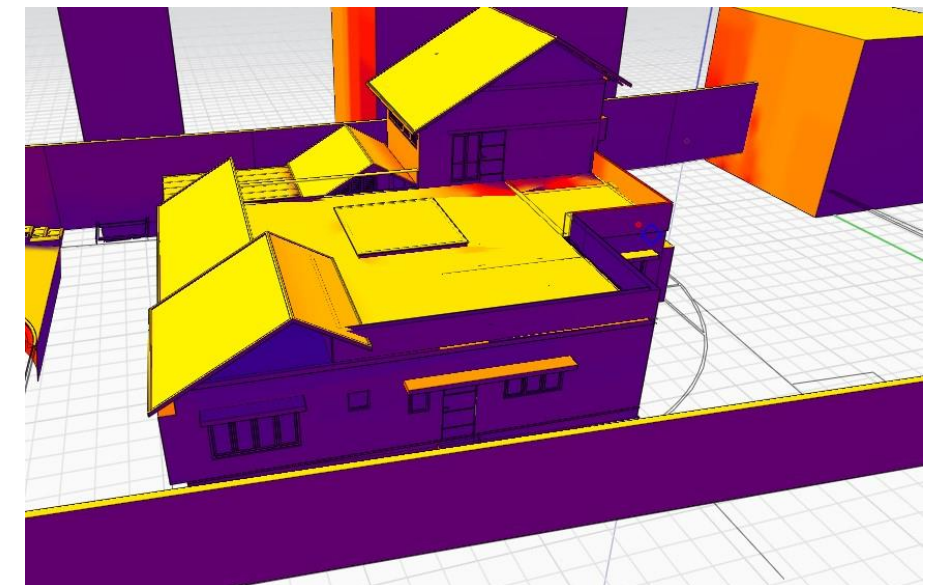




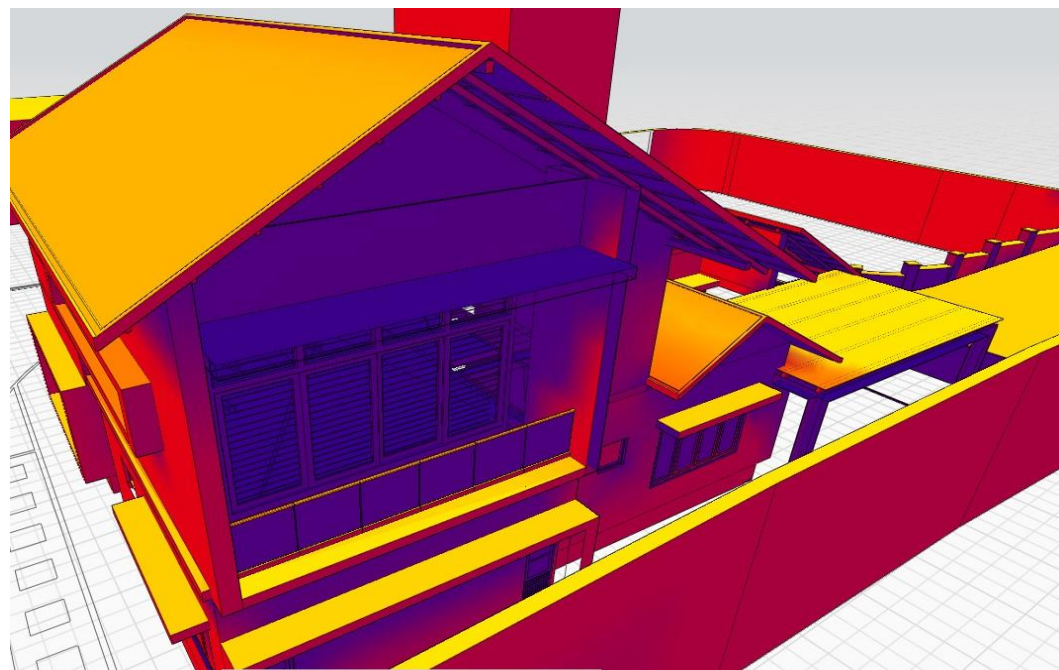
Top view-911.8wh/sqm



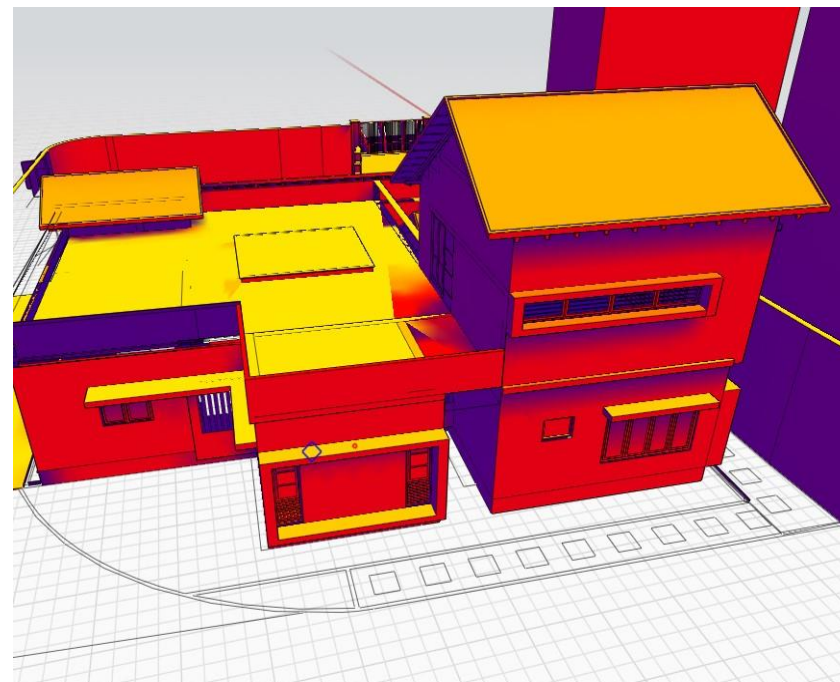
North-409wh/sqm



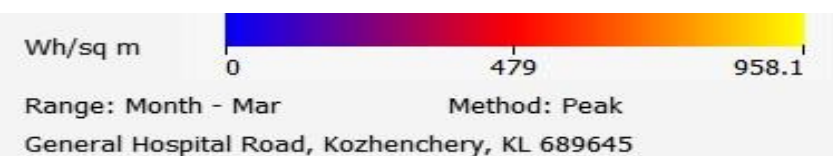
East-77.48wh/sqm



South-184.54wh/sqm

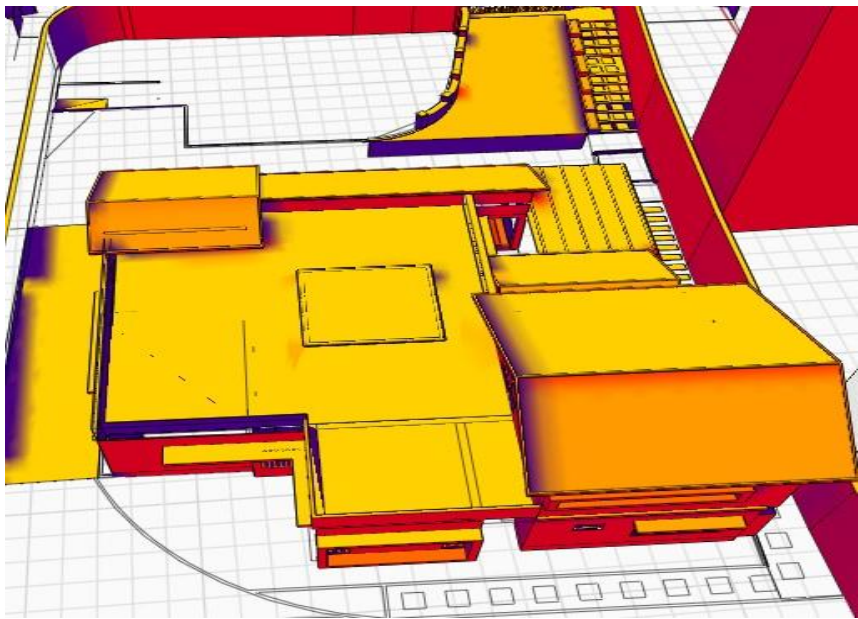


West-396.5wh/sqm

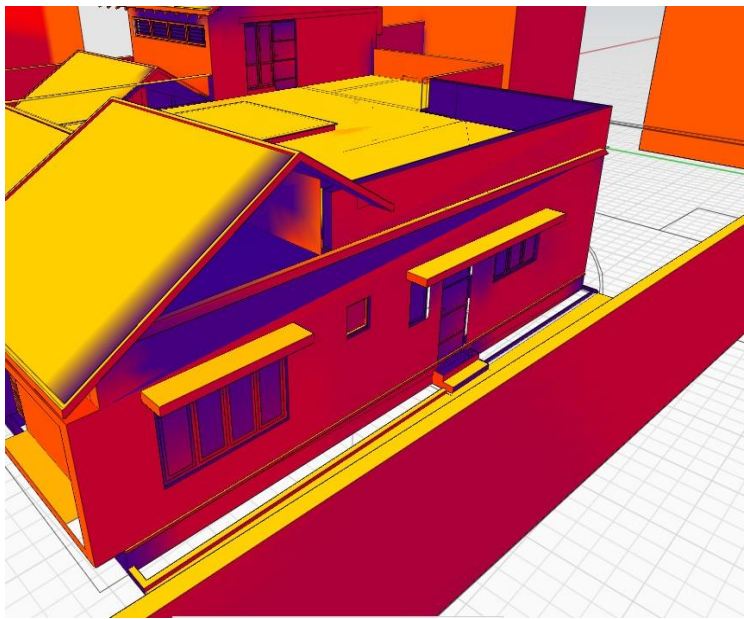


FORMIT ANALYSIS:

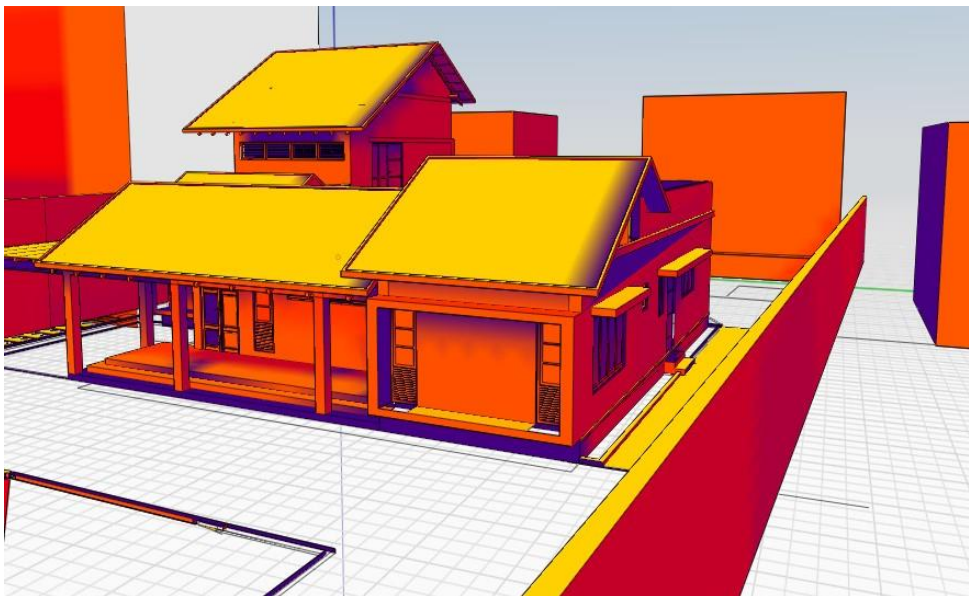
- North and West facade receives major solar radiation than South and East.
- Altitude of sun is high in the noon time sun is directly above the building.



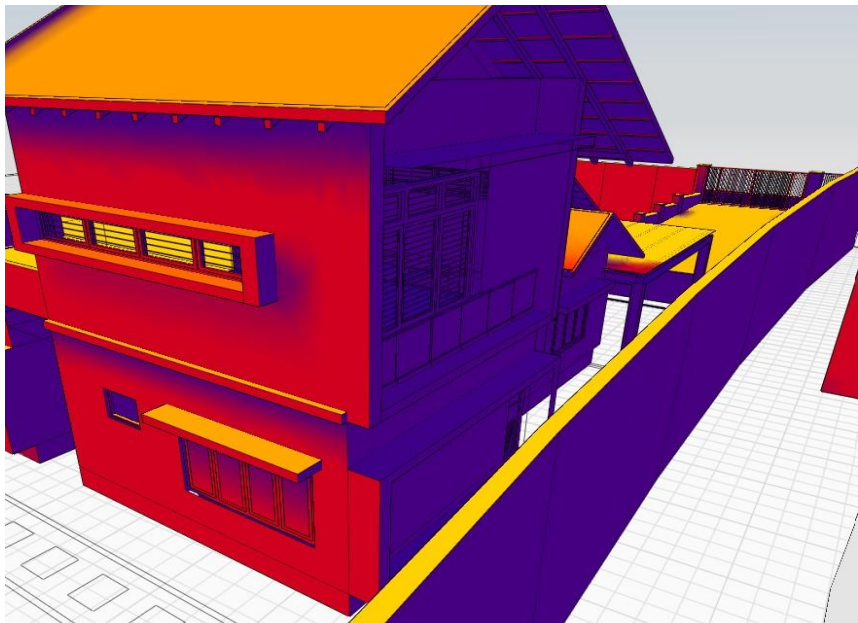
Top view- 822wh/sqm



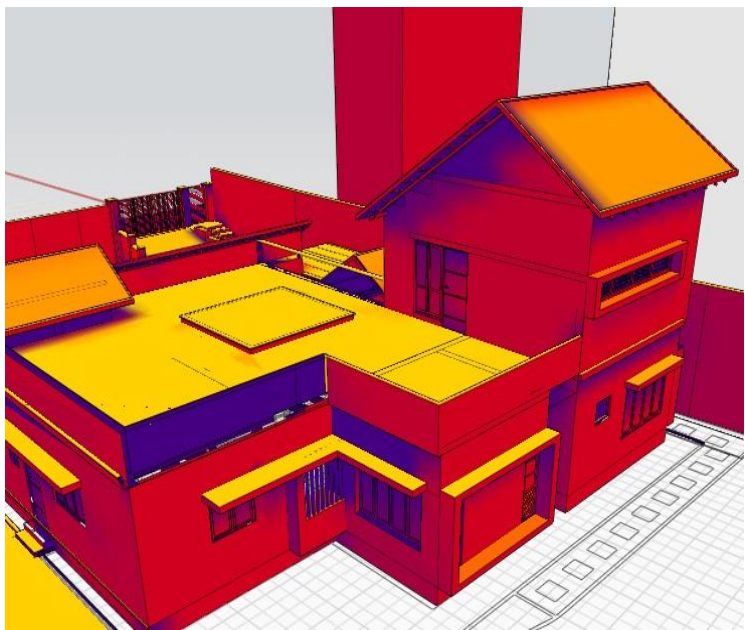
North-456wh/sqm



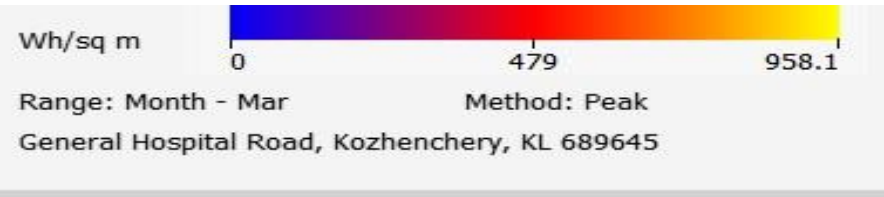
East-767 wh/sqm



South-150wh/sqm

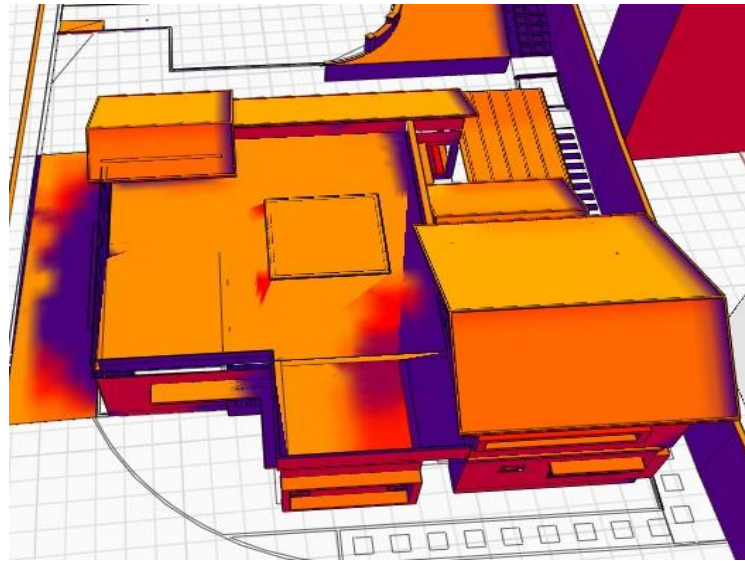


West-309wh/sqm

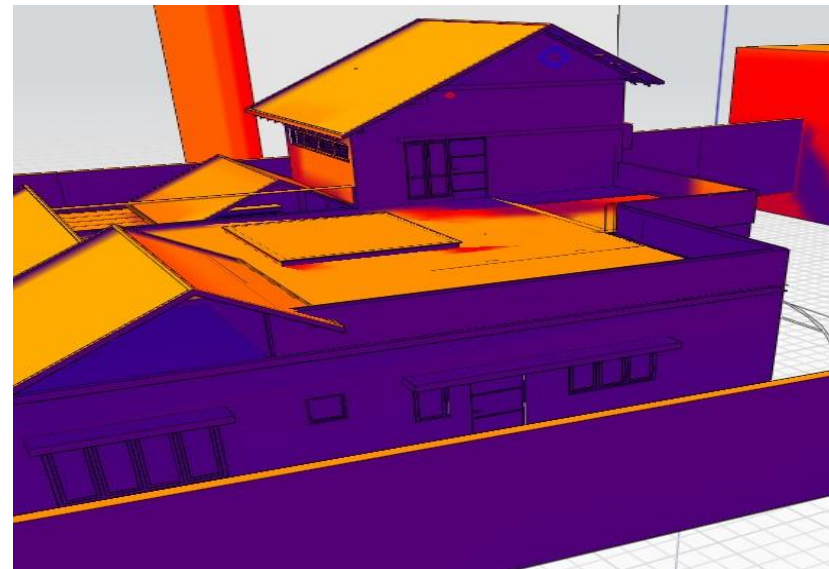


FORMIT ANALYSIS:

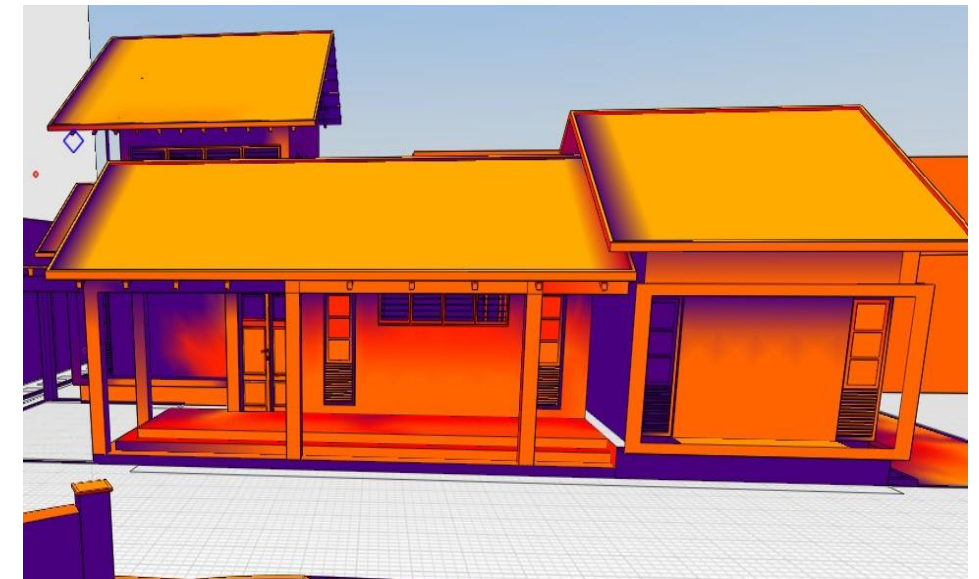
FORMIT ANALYSIS: East West and North receives more solar radiation



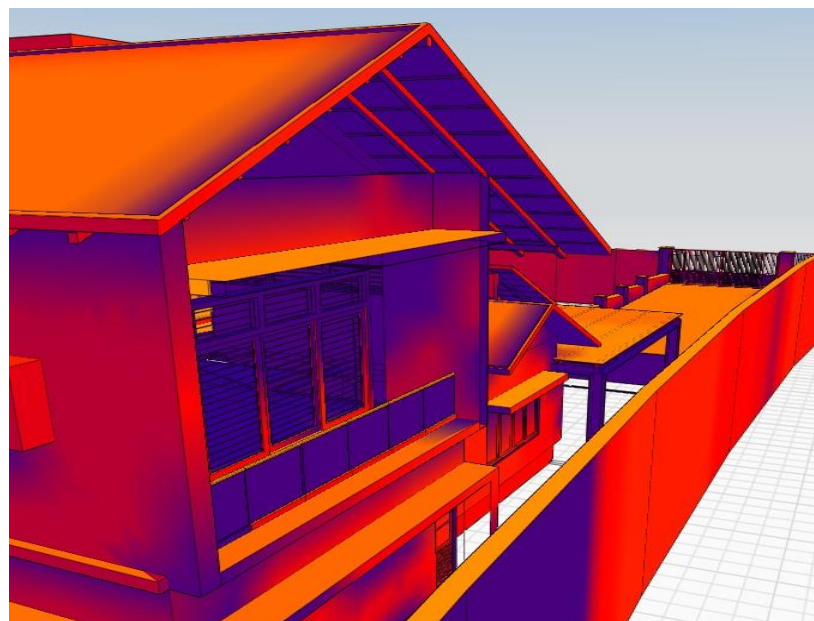
Top view-350wh/sqm



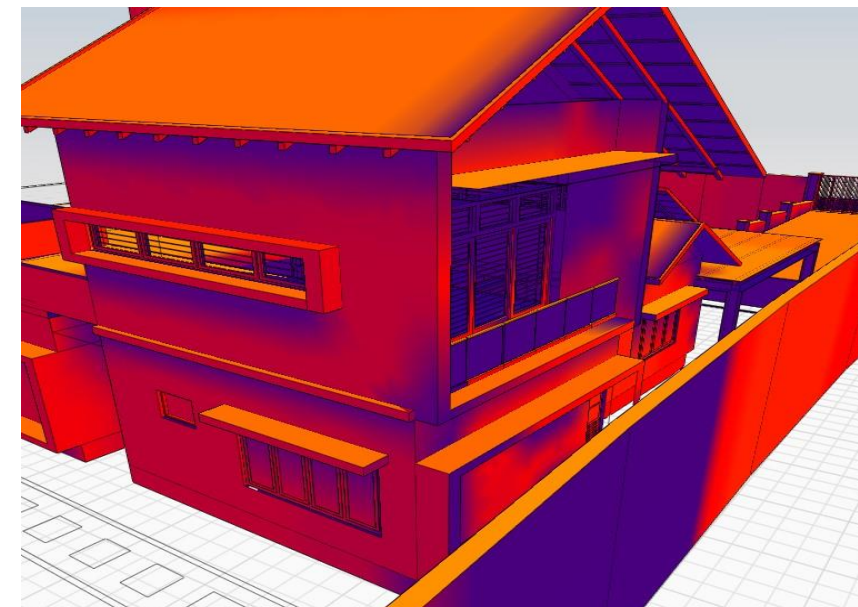
North-130wh/sqm



East-220wh/sqm

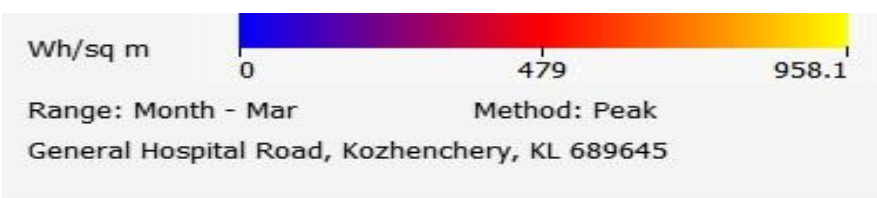


South-301wh/sqm



West-305wh/sqm

FORMIT ANALYSIS:
Compared to last two months
December month receives less solar
radiation to the building



1. SELECTION Certain factors are considered while selecting the bamboo culms for using it for concrete structures as reinforcement : i. Bamboo having a pronounced brown color is used. Plant should be 2-3 years old. ii. Longest large diameter culms are selected iii. Green unseasoned bamboos are not used.

2. PREPARATION

Sizing :

Splints or split culms are more effective than the whole culms for reinforcement. Large culms are split into splints. One large culm can be divided into 4 equal splints. Culms having smaller diameter can be used without splitting. Splitting is done by pulling a dull blade through the culms. Dull blade is used so that the stem will split open, this is more effective than cutting the bamboo since splitting produces continuous fibers and a straight section

ii. Seasoning : After the bamboo is cut, it should be dried and seasoned for about 3-4 weeks. iii. Water proof coatings : Water proof coatings may be used inorder to reduce swelling when it comes in contact with the concrete.



Splitting the bamboo culms



Bamboo Splints



Universal testing Machine

3. CONSTRUCTION PRINCIPLES:

Methods and techniques which are used for the conventional reinforcement concrete are used.

i. Formwork : A mold of standard size 150mm X 150mm X 700mm (IS 10086: Specification for molds for use in tests of cement and concrete, 2008) for the beam is made using wooden members Bamboo splints of lengths 60 – 65 cm are cut so that it can be placed inside the mold.

The spacing between the bamboo must be more than the maximum size of the aggregate. Reinforcements must be placed evenly and is tied together with short splints which are placed at right angles to the main reinforcement splints. Two layers are used here for reinforcements. Both the layers are tied using wires. This formwork is placed inside the mold.



Formwork placed inside the mould



Tied bamboo reinforcements



Formwork of bamboo reinforcement(2 layers)



Volume batching of M20 cement grade

CONCRETE MIX PROPORTIONS :

Similar mix designs which are usually used with steel reinforced concrete can be used. M20 mix design is used here, where 1 part cement, 1.5 part sand and 3 part aggregate in volume is batched for mixing. In M20, „20“ refers to the specified compressive strength of 150mm cube which is expressed in N/mm². M20 is the most commonly used grade of concrete.

The specimen is kept inside water for about 21 days for the concrete to set. The reinforcements must be checked in order to make sure that they are free from any detritus(tie ends etc). Then the concrete mix is placed inside the mold with foam work.

Fully set concrete beam with reinforcements of bamboo is obtained. This can be used to test the strength



Mixing of cement concrete



Concrete placed in the mould



Bamboo reinforced concrete beam

TESTING THE STRENGTH

The flexural strength of the beam is tested in an UTM (Universal testing machine). The beam is placed by spanning it across two supports in the loading unit.



Universal testing Machine



Beam placed in the loading unit of UTM

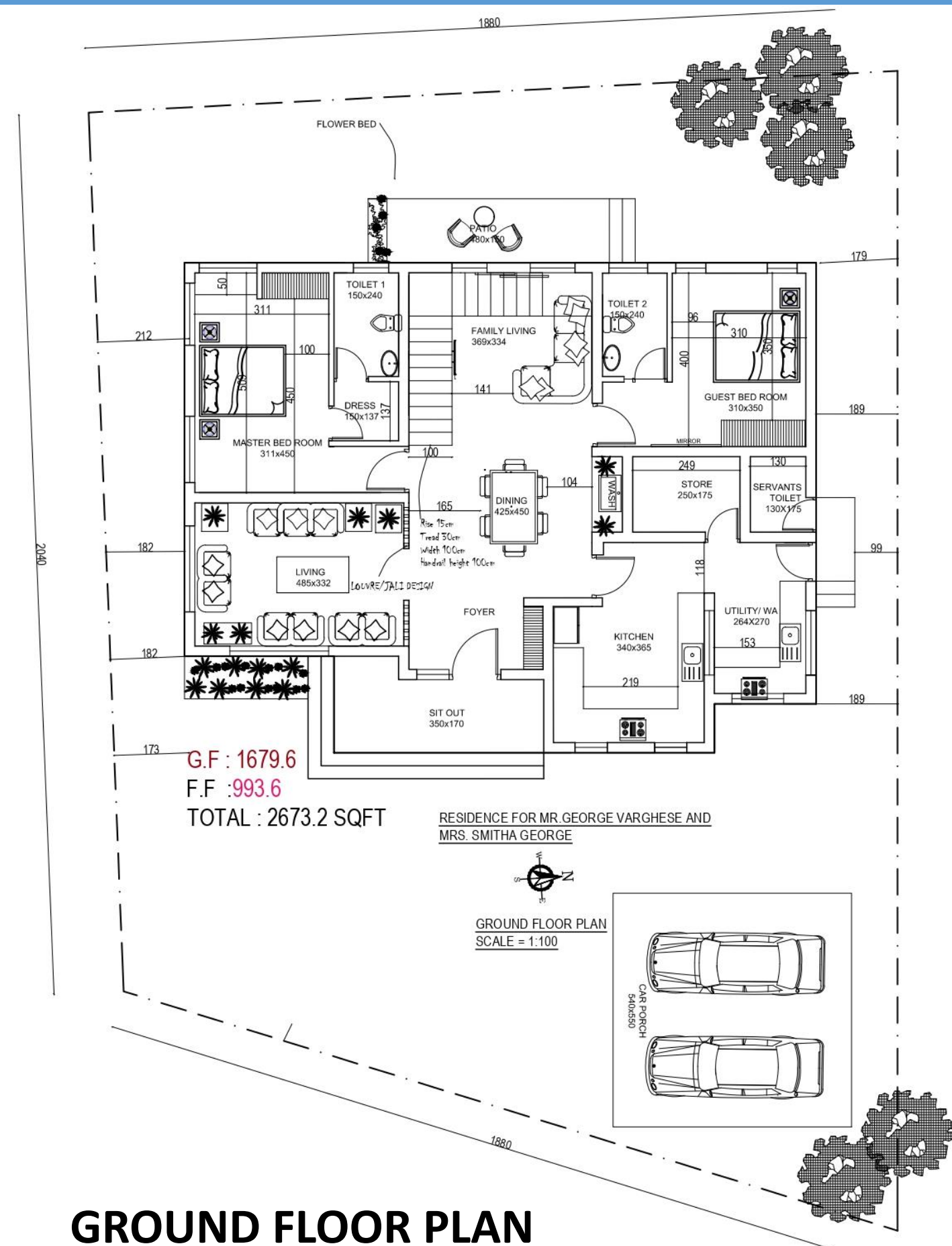
The beam is subjected to a point load which is applied to the center of the beam. The load is gradually applied on specific rate. The load pointer shows the increasing load and a dummy pointer moves with the load pointer. The dummy pointer deflects back when a crack occur in the beam, that is it deflects back when the beam fails.



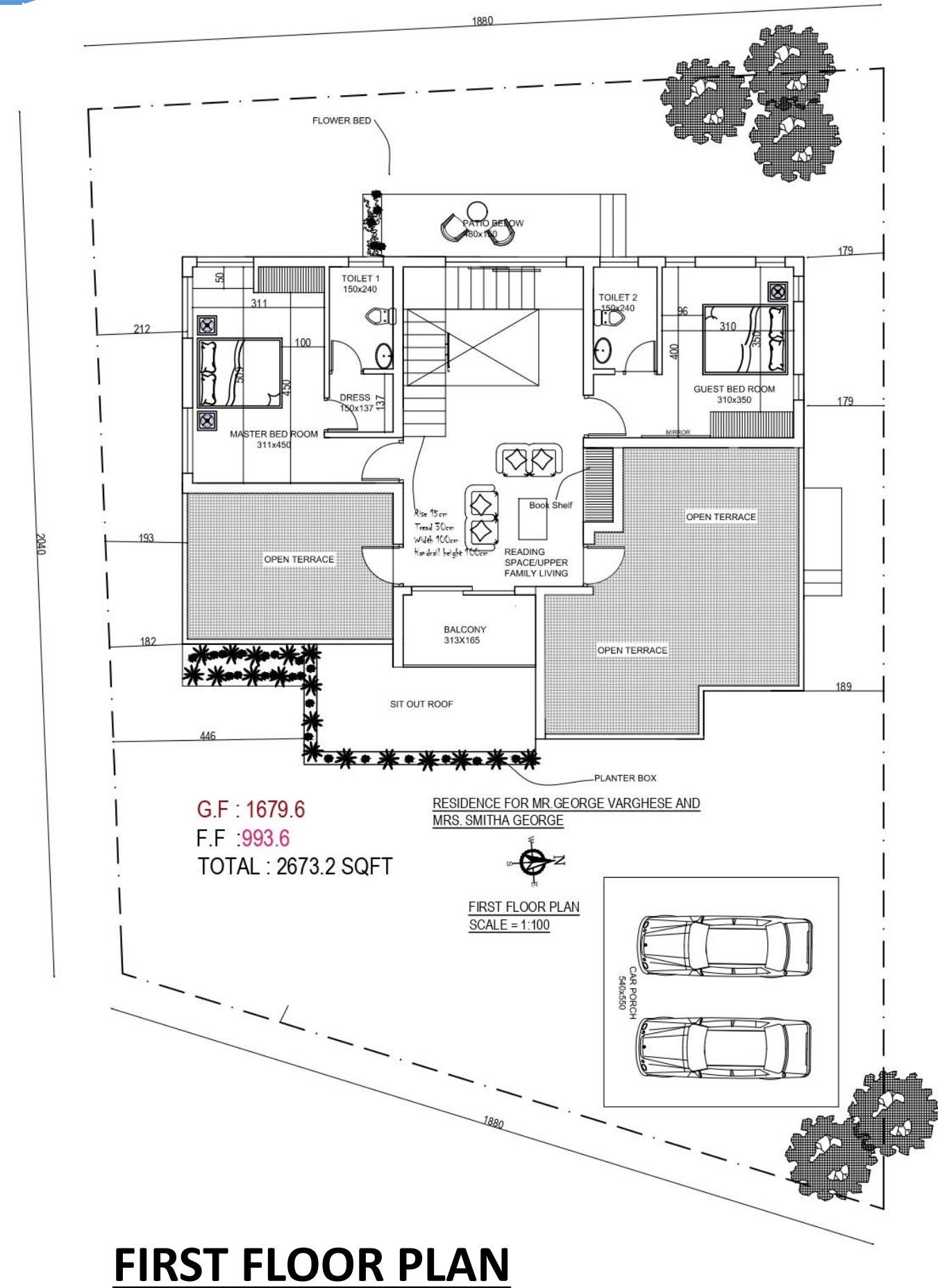
Crack in the beam due to bending

The value in the control unit is recorded when the beam fails. The point at which the dummy pointer deflects back gives the maximum load the beam can carry. The maximum value of load the beam can carry was recorded as 12.8 KN.

FLOOR PLANS-RESIDENCE FOR Mr. GEORGE VARGHESE



GROUND FLOOR PLAN



FIRST FLOOR PLAN



Providing pergola pavilion with vegetation on top of first floor which acts both as aesthetic purpose and also *gives more cooling to the roof* as it reduces the heat on the terrace floor. And also seating's are provided to relax and enjoy with family





Providing glass blocks on facades to let in more light inside the building