

PROFESSIONAL TRAINING REPORT

Submitted in partial fulfillment of the requirements for the award of a
Master of Architecture degree in Sustainable Architecture

By

PRIYANKA.S / 41890012



**SCHOOL OF BUILDING AND ENVIRONMENT
DEPARTMENT OF ARCHITECTURE**

SATHYABAMA

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

Accredited with Grade "A" by NAAC

JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI - 600 119



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

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www.sathyabama.ac.in

SCHOOL OF BUILDING AND ENVIRONMENT

DEPARTMENT OF ARCHITECTURE

M. Arch (Sustainable Architecture)

PROFESSIONAL TRAINING REPORT (S89APT)

JUL 2022 - AUG 2022

Name of the Student : PRIYANKA . S

Semester : III

Reg No. : 41890012

Batch : 2021-2023



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M. Arch (Sustainable Architecture)

VIVA-VOCE EXAMINATION

This is to certify that the Professional Training Report (S89APT) is the work of **PRIYANKA.S** who had undergone training in **BUILDING RESOURCE HUB** and has been monitored by the continuous assessment from Jul 2022 to Aug 2022.

Dr. Devyani Gangopadhyay
HOD AND DEAN

Submitted for Viva-Voce Examination held on 20/12/2022

Internal Examiner

External Examiner

(Annexure III)



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DECLARATION

I **PRIYANKA.S** hereby declare that this Professional Training Report [09/07/2022 – 15/08/2022] was done by me under the guidance of **Ar. ASHISH BHUVAN** is submitted in partial fulfillment of the requirements for the completion of the practical training session.

DATE : 20/12/2022

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 this project and for completing it successfully. I am grateful to them.

I convey my thanks to **Dr. Devyani Gangopadhyay** Dean, School of building and Environment for providing me with necessary support and details at the right time during the progressive reviews.

I would like to express my sincere and deep sense of gratitude to **Ar. ASHISH BHUVAN & Ar. SHRUTI MORABAD [BRH]** for their 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 Coordinator) 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 project.

Also thanks to **Ar. Ashish Bhuvan & Ar. Shruti Morabad @ BUILDING RESOURCE HUB**, no. 36, 2nd main, Anand Nagar, Bangalore - 560024

A hearty thanks to all my friends & family who supported me during the training period.

CONFIRMATION LETTER

BUILDING RESOURCE HUB

No.36, 2nd Cross,
Anand nagar, RT Nagar,
Bangalore- 560032



Green Innovation Crafted

To
The Dean/HOD
Architecture Department
Sathyabama Institute of Science & Technology

Dear Madam,
We are pleased to confirm internship for Miss Priyanka S, student at your college.
She can do this internship for 30 days, at our office:

Building Resource Hub
Bangalore - 560032

Mobile: +91 9620319962
E-mail: bhuvanashish@gmail.com

If you need any further clarification, in this regard please contact the undersigned.
Thanking you

with best regards
Ashish Bhuvan
(Chief architect)
28.06.2022

BUILDING RESOURCE HUB
36, 2nd Main, Anand Nagar
Bangalore - 560 024

TRAINING COMPLETION LETTER

BUILDING RESOURCE HUB

No.36, 2nd Cross,
Anand nagar, RT Nagar,
Bangalore- 560032



Green Innovation Crafted

To whomsoever it may concern

This is to certify that Miss.Priyanka S, a student of Sathyabama Institute of Science & Technology, has successfully completed her professional training for one month at our company, with respect to the fulfilment of the requirements of the M.Arch program.

Miss.Priyanka was involved in energy modelling and simulations for our projects and involved in site visits as well.

We wish her all the very best for her future endeavours.

Best Regards

Ashish Bhuvan

Principal Architect

Building Resource Hub

(20.08.2022)

BUILDING RESOURCE HUB
36, 2nd Main, Anand Nagar
Bangalore - 560 024



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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 16 working days in the office to be submitted to HOD)

1. Name of the office / organization :	BUILDING RESOURCE HUB
2. Address & Contact Number :	No. 36, 2 nd Main, ANAND NAGAR, BANGALORE - 560 024
3. Name of the student :	MEYANKA.S
4. Duration :	From 29/07/2022 To 14/08/2022
5. Total No. of days :	15 days
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					
Skills related to project management	✓				
Design Management		✓			
Understanding the Triple Constraints					
Observation during Site Visits		✓			
Understanding of construction details		✓			
Understanding of Construction sequences		✓			
Site Supervision / Discussion with clients					
Adherence to Time schedule	✓				
Quantitative aptitude		✓			
Documentation skills	✓				
Coordination with other consultants					

Overall Grading*	A
------------------	---

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

7. Any other Remarks : PRINCE HAS A GOOD UNDERSTANDING OF THE NEW CONCEPTS. A VERY EASY PERSON TO WORK WITH

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

[Signature]

BUILDING RESOURCE HUB
36, 2nd Main, Anand Nagar
Bangalore - 560 024



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Quantitative aptitude		✓			
Documentation skills		✓			
Coordination with other consultants					

Overall Grading*	A
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(A - 8.0, B - 7.0, C - 6.0, D - 5.5, E - 5.0, F - <5)

7. Any other Remarks : KEEN OBSERVATION, HANDS ON, GOOD DOCUMENTATION SKILLS.

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

[Signature]

BUILDING RESOURCE HUB
36, 2nd Main, Anand Nagar
Bangalore - 560 024

WORK DIARY

Date	Project Name	Work Done
09/07/2022 – 12/07/2022	Ms. Smitha - Residence	3d development of CAD plan
13/07/2022 – 14/07/2022	Ms. Smitha - Residence	CSEB – block qty & course arrangement
15/07/2022 – 18/07/2022	Ms. Smitha - Residence	Working drawings – CAD & Solar radiation analysis
19/07/2022	Mr. Sunil - Residence	Site visit @ Nandha Prakruthi
20/07/2022 – 21/07/2022	Ms. Smitha - Residence	Elevation & Section works – CAD
22/07/2022 – 25/07/2022	Ms. Smitha - Residence	3d interior design & CSEB block U – value calculation
26/07/2022 – 27/07/2022	Ms. Smitha - Residence	2d detailing works – CAD
30/07/2022 – 01/07/2022	Ms. Smitha - Residence	Daylighting analysis
01/08/2022	Ms. Smitha - Residence	Simulation & Documentation
02/08/2022 – 03/08/2022	Mr. Sunil - Residence	Daylighting simulation & documentation
04/08/2022	Mr. Sunil - Residence	Site visit @ Nandha Prakruthi
05/08/2022	Mr. Sunil - Residence	Daylighting analysis
08/08/2022 – 15/08/2022	Hyderabad residence	Daylighting analysis – light pipes vs regular skylights

Chief Architect Signature:



Office seal:



ABOUT THE FIRM:

BUILDING RESOURCE HUB @ BANGALORE – ENABLING SUSTAINABILITY FOR ALL....

BRH was initially under the firm named *IDEN LAB architects* with the great team included all the experts in specialized works and was eventually fragmented in the later years which was effectively based on the practise of sustainable design & green building concepts.

After practising and learning from several projects dealt with the concepts of sustainability, Ar. Ashish Bhuvan along with his fellow Ar. Shruti Morabad started their own consultancy by realizing that the concept of sustainable homes & projects should not be limited to just few people but should also reach the common people [affordable for all] is how the journey of '**BUILDING RESOURCE HUB**' started....under the objectives of;

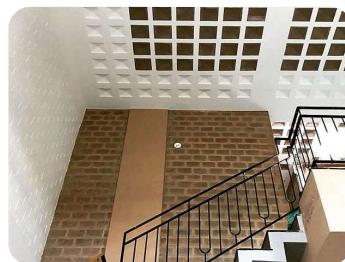
1. **TO BUILD SUSTAINABLE HOMES**
2. **TO EDUCATE THE LOCAL PEOPLE**

The special thing about the **BRH's** practise is that they take an eco – friendly approach in everything from the construction technique to the interior designing, added to the statement that the overall cost of any sustainable building is almost the same in fact sometimes lesser than the original cost of any other conventional buildings with the conscious of reducing the negative footprints among the environment & building the houses with clay & stone with respect to the client's statement regarding the temperature, climate & comfort, all the design solutions are based on dependency & availability of the local resources.....



Effectively and efficiently joins & works with alt lab innovators team for the sustainable interior design approaches...where the doors, windows & other interior creations are upcycled and used from the old dilapidated projects...

The other engineering values....regarding the knowledge of CSEB block preparation RWH techniques Solar panel installation are keenly taken from the ASTRA dept. of IISC @ Bangalore....



Sustainable Design Consultancy



Compressed Earth Block manufacturing



Value Engineering Products & Services



CENTRE FOR SUSTAINABLE TECHNOLOGIES
INDIAN INSTITUTE OF SCIENCE



Experiments with Earth:

Creating Boulder walls using undressed boulders from the site, a technique that reduces the dependability on high skill to make stone walls, as well as making use of locally available resources.



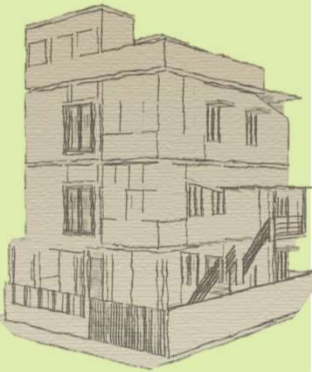
Stabilized earth:

Earth is such a versatile material, that can be used in walls, floors and roofs as well, as replacements to high energy intensive concretes. Incorporating earth in different ways in all the projects.

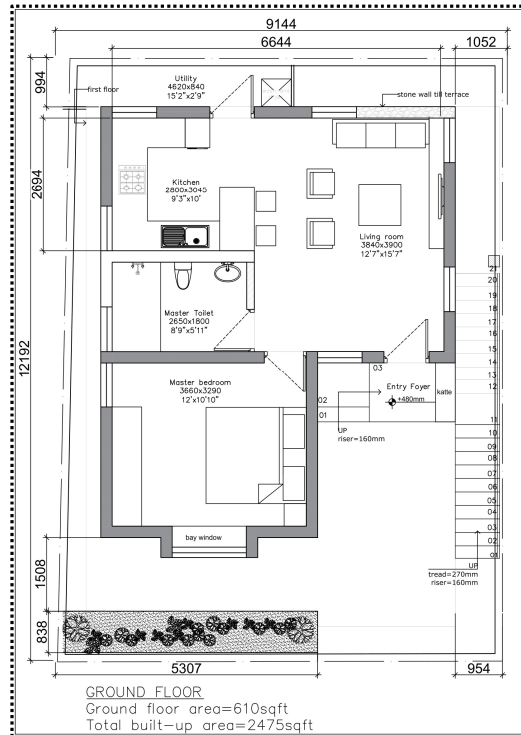
1. PROJECT Ms. Smitha

@

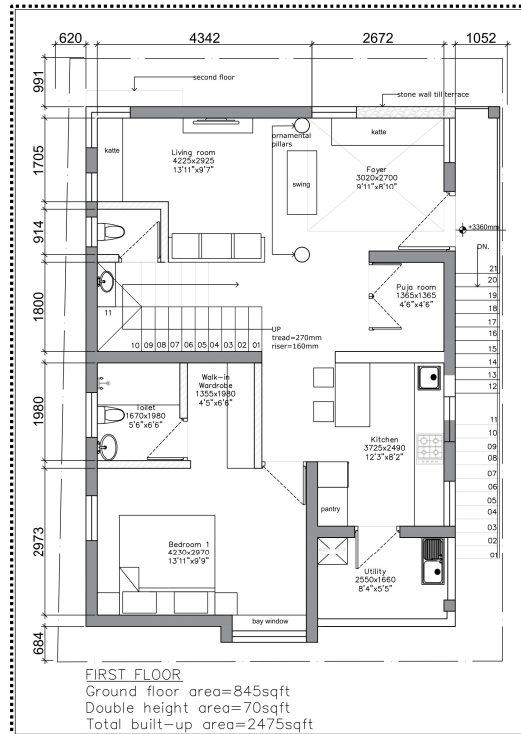
Bangalore...



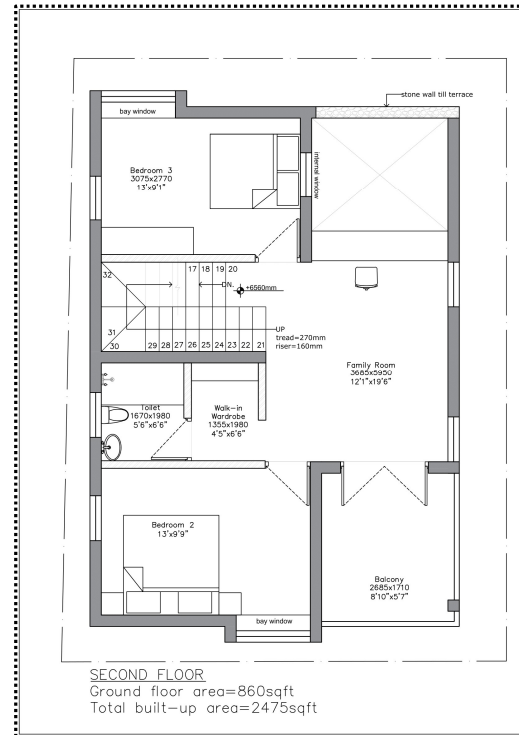
GROUND FLOOR



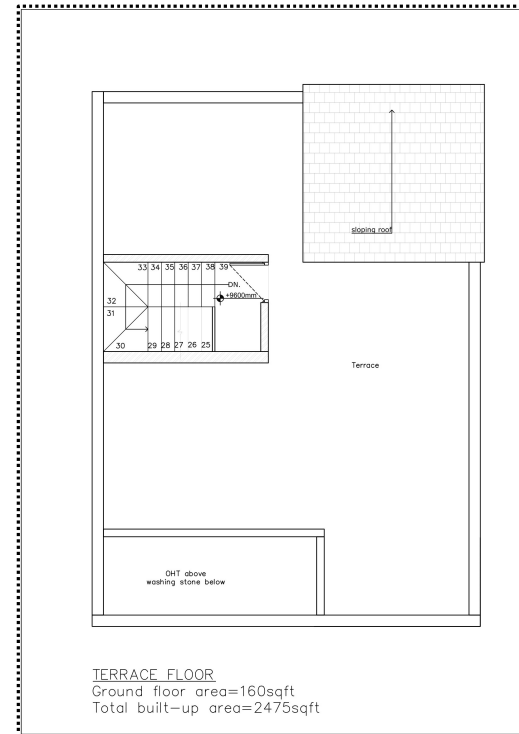
FIRST FLOOR



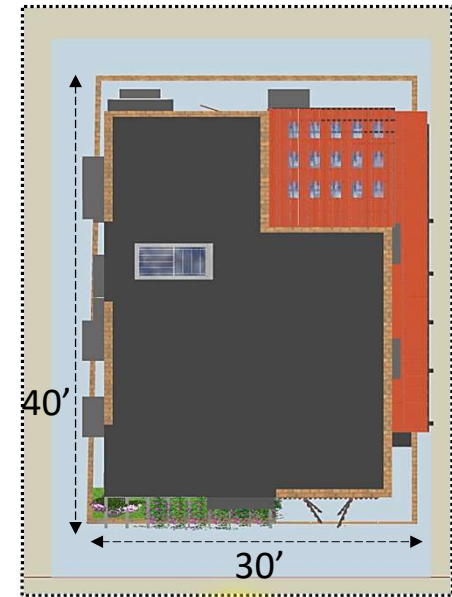
SECOND FLOOR



TERRACE FLOOR

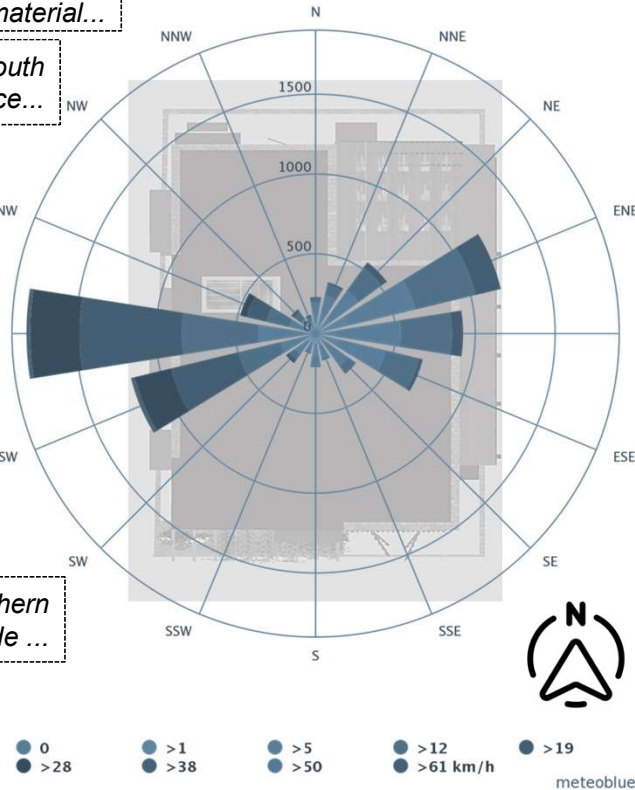
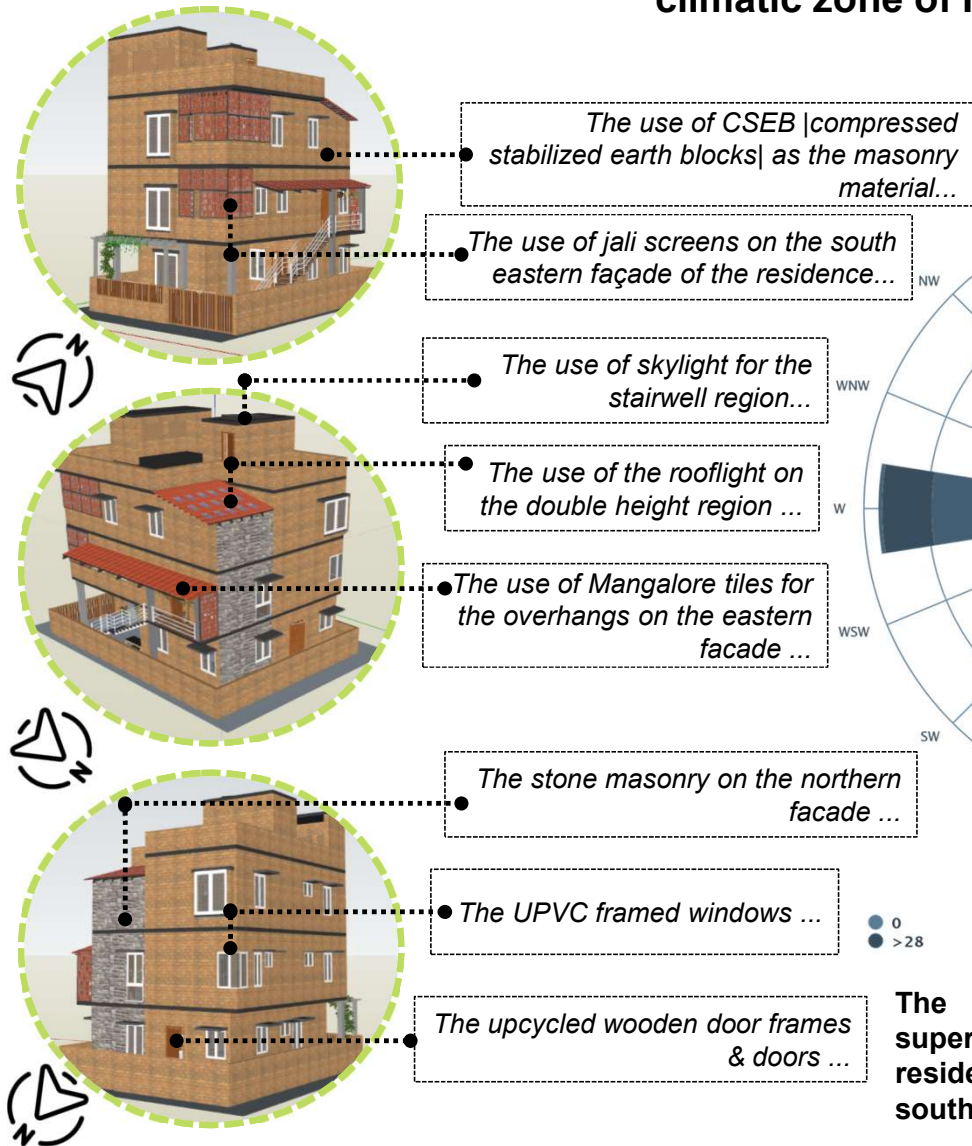


The Building floor plans
& The south oriented
ENTRY..

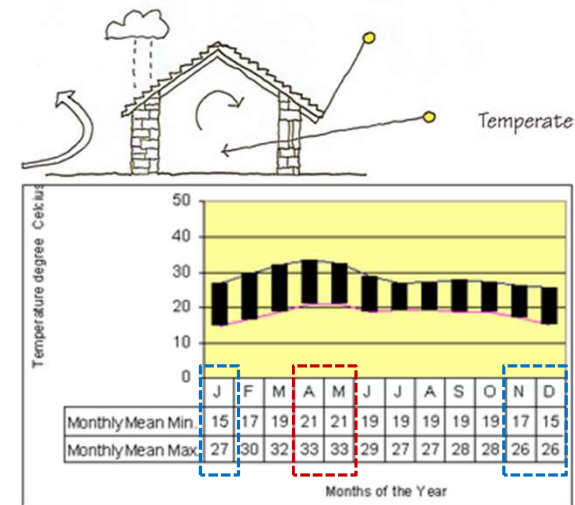


THE SITE PLAN of
30 ' X 40 ' Residence

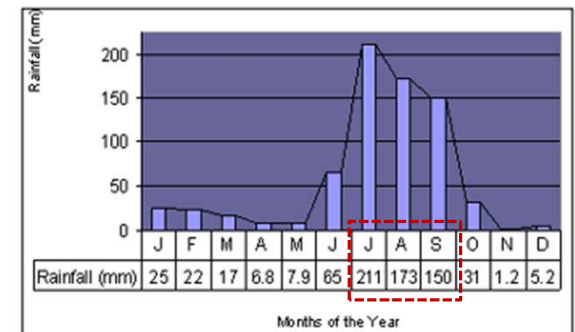
The design strategies involved for the residence in the temperate climatic zone of India...



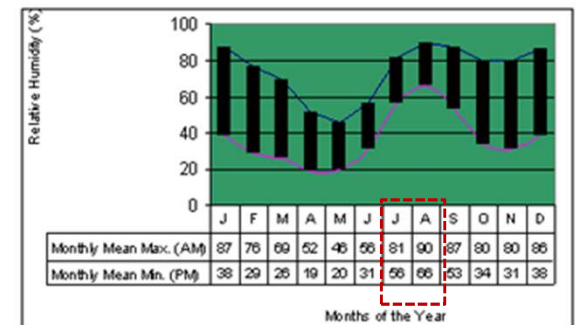
The wind rose chart of Bangalore superimposed on the south oriented residence experiencing the wind flow from south west & north west direction...



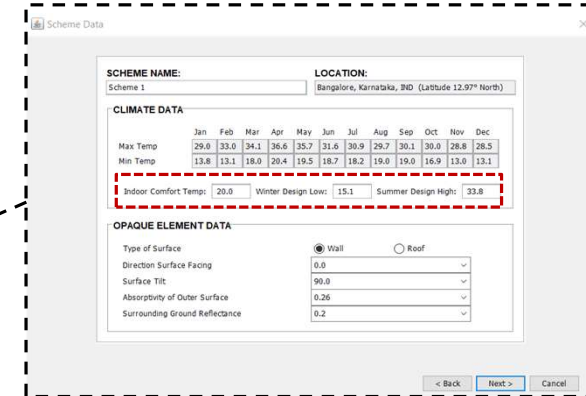
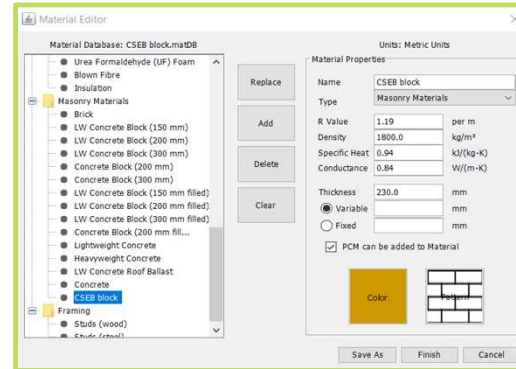
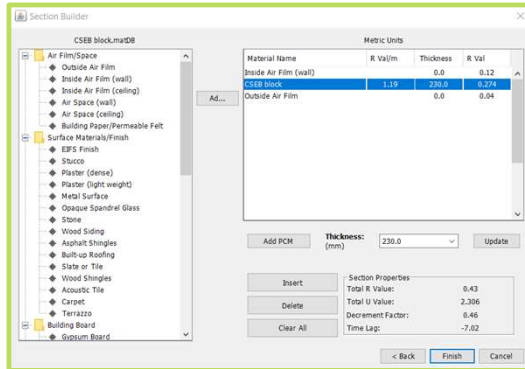
The month of APRIL & MAY has the higher temperature & the coolest month involves NOV, DEC & JAN...



The month of JULY, AUG & SEP receives rainfall above 100mm.. & the most humid month involves JULY & AUG.

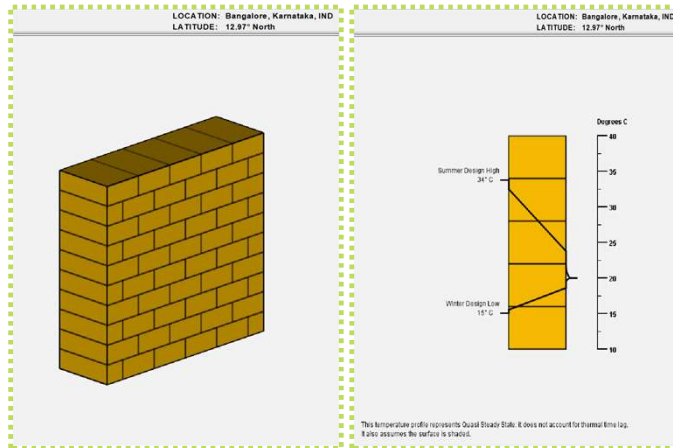


Finding the U -
value for the CSEB
block of 230 mm
thickness..
& The thermal time
lag of the CSEB
block masonry in
hrs through
Opaque 3.0
software tool ...

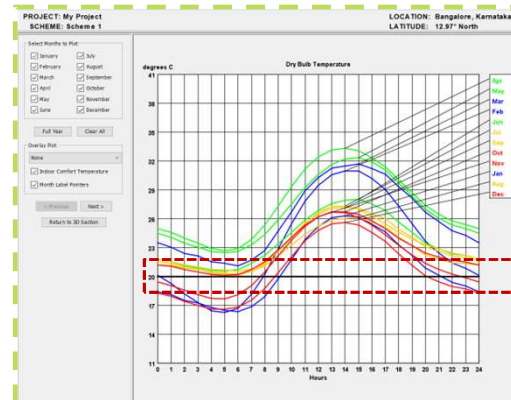


The climatic data input through the epw file for Bangalore region with the maximum & the minimum temperature levels for design comfort ...

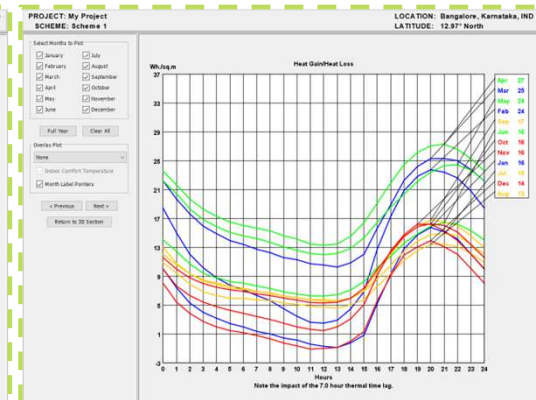
The input parameters for the U-value calculation of the CSEB blocks [wall], involving the thermal resistance [R-value], Conductance & the density of the material [$U = 1/R$] ...



The Axonometric view & the section of the CSEB block masonry wall with the comfort temperature design state & having the U-value of 2.3 W/sq.m K proving a good value for any soil stabilized masonry material ...

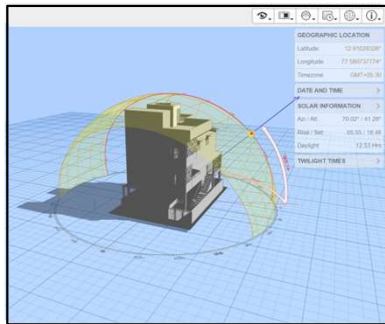


The resultant dry bulb temperature graph showing the comfort temperature maintained @ 20°C with the peak & lower design temperature range...

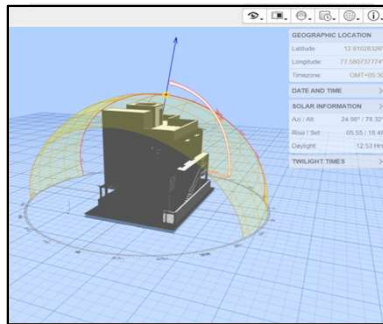


The resultant heat gain / loss graph showing the thermal time lag of exact 7 hrs to withstand & penetrate the heat gain indoors proving comfort hours for the occupants in the moderate climatic regions..

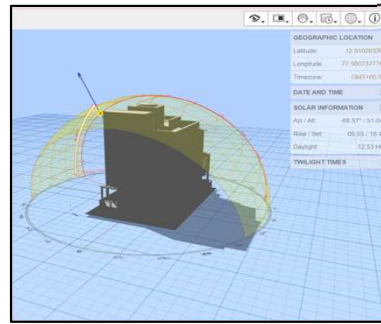
BUILDING ENVELOPE DETAILS..



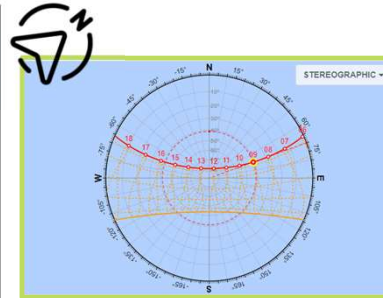
@ 9:00 a.m.



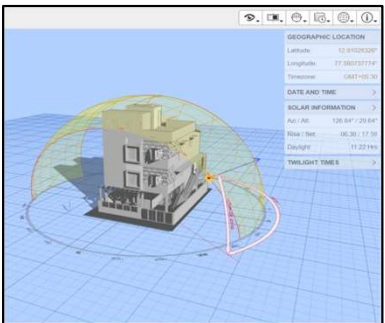
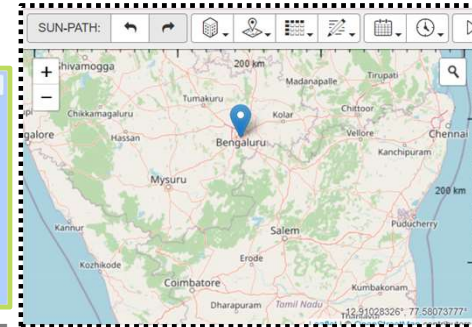
@ 12:00 noon



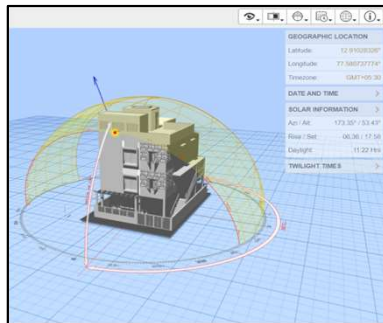
@ 3:00 p.m.



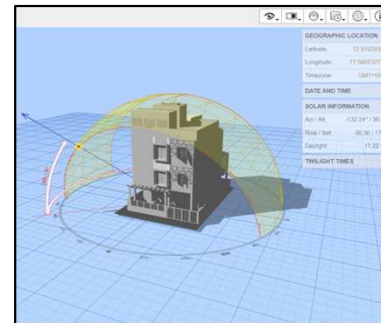
The summer solstice @ 21st JUNE...



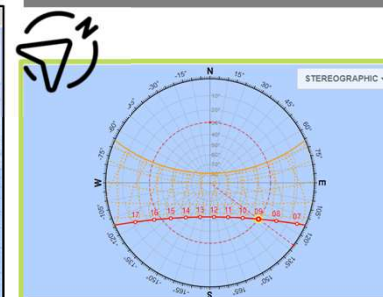
@ 9:00 a.m.



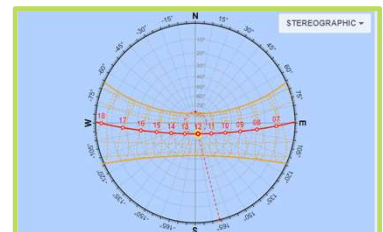
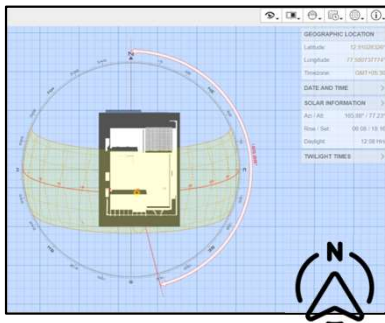
@ 12:00 noon



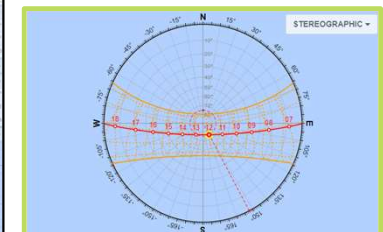
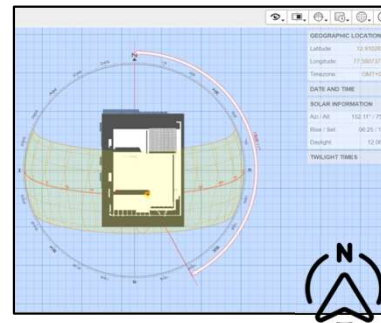
@ 3:00 p.m.



The winter solstice @ 21st DECEMBER...



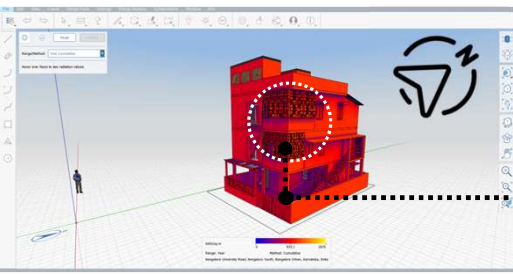
The fall equinox @22nd SEPTEMBER @ 12:00 noon...



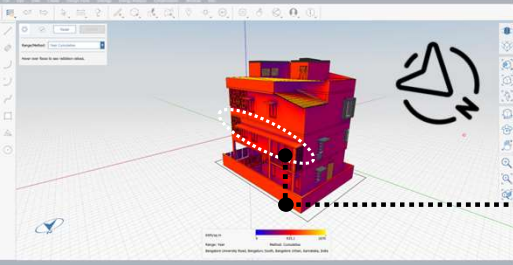
The spring equinox @20th MARCH @ 12:00 noon...

The shade, shadow & the sun path analysis for the residence during the summer & the winter solstice in their perspectives with a notice of 9:00 a.m. , 12:00 noon , & 3:00 p.m. &

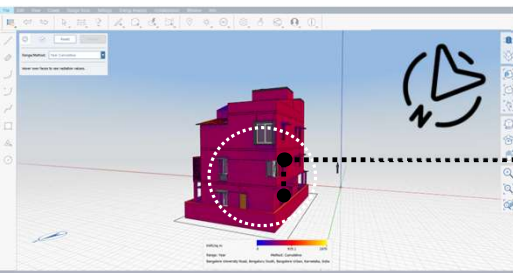
The equinoxes during the fall & spring been analysed @ 12:00 noon with their roof plans using the tool Andrew.marsh.com ...



The year cumulative radiation analysis - south - east perspective ...



The year cumulative radiation analysis - north - east perspective ...



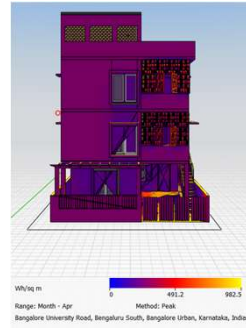
The year cumulative radiation analysis - north - west perspective ...

The south-east solar radiation or the external weather conditions are protected by the jali screens..

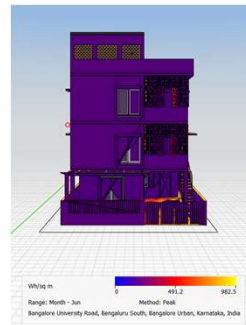
The openings on the eastern façade are protected from the annual radiation through the Mangalore tile overhangs ..

Enough openings or the glazing are provided@ the north-east façade are prevented from the annual solar radiation and gain the western winds..

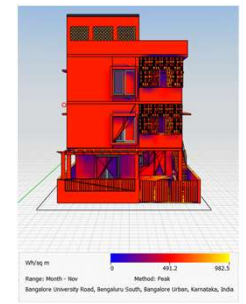
The SOUTH facade...



@ APRIL 12:00 noon..

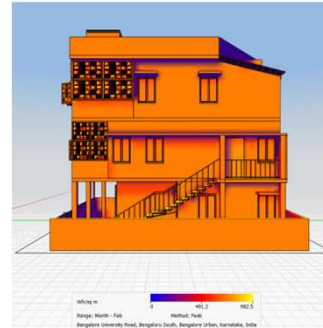


@ JUNE 12:00 noon..

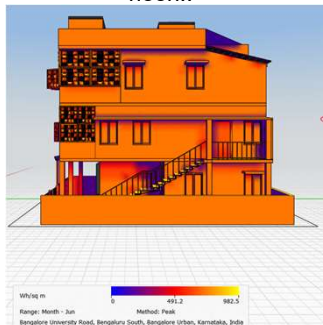


@ NOVEMBER 12:00 noon..

The EAST facade...



@ FEBRUARY 12:00 noon..



@ JUNE 12:00 noon..



@ NOVEMBER 12:00 noon..

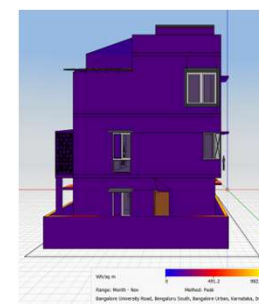
The NORTH facade...



@ APRIL 12:00 noon..

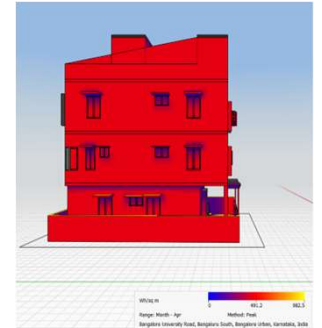


@ JUNE 12:00 noon..

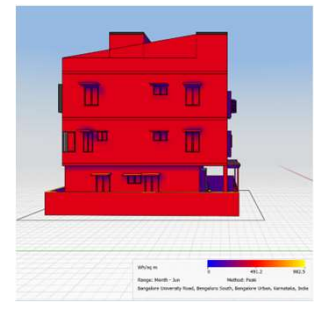


@ NOVEMBER 12:00 noon..

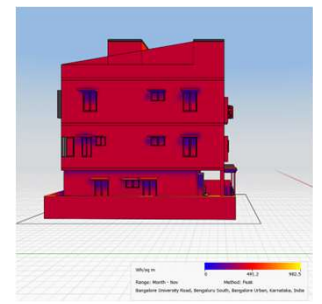
The WEST facade...



@ APRIL 12:00 noon..

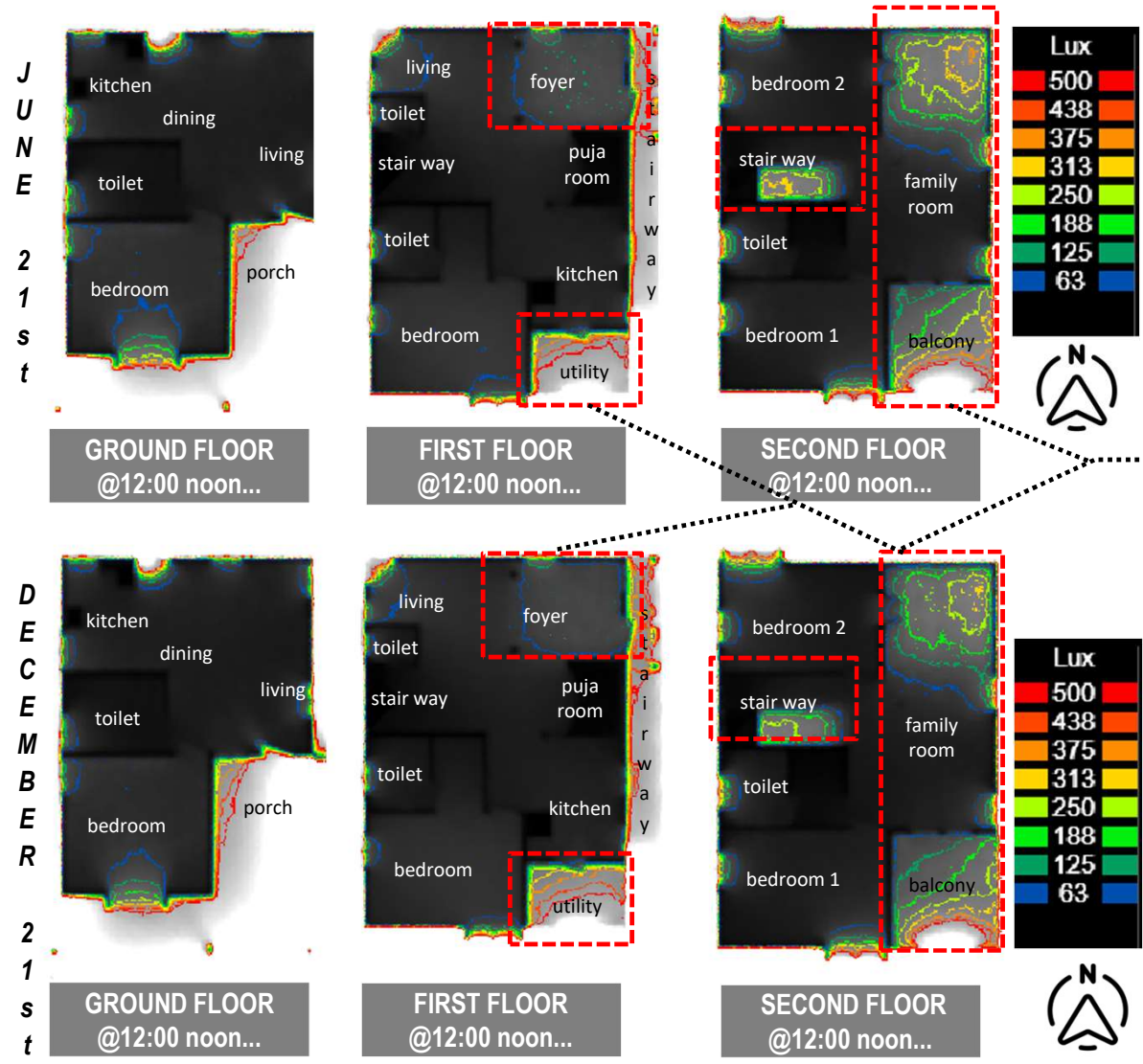


@ JUNE 12:00 noon..



@ NOVEMBER 12:00 noon..

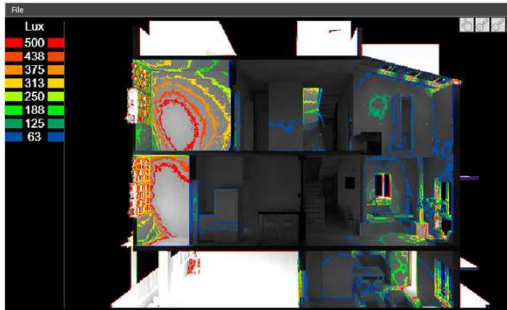
Formal analysis - radiation



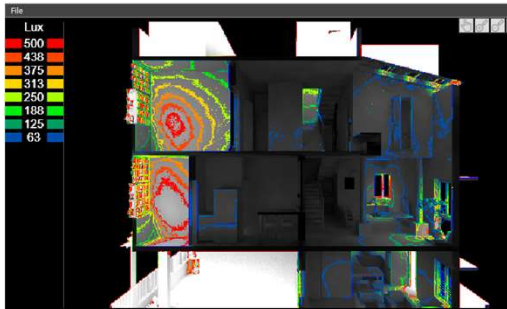
The allowable daylight in lux levels are achieved in the first & the second floor through the skylight @ the stairwell region, through the jail screens in the south & through the roof light @ the double height levels, the residence receives the similar lux levels for both the summer & the winter solstice as the design of residence is located @ the temperate climatic region.. which is analysed @ the peak time of 12:00 noon..



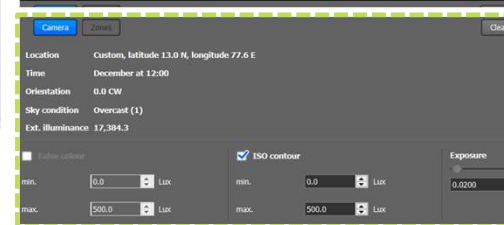
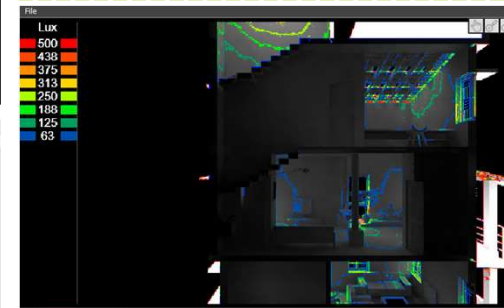
JUNE 21st



The interior lux levels found in the cross - section of the residence seen in the southern & the eastern parts of daylight in lux levels achieved through the designed apertures. is analysed for both the summer & the winter solstice @ 12:00 noon..



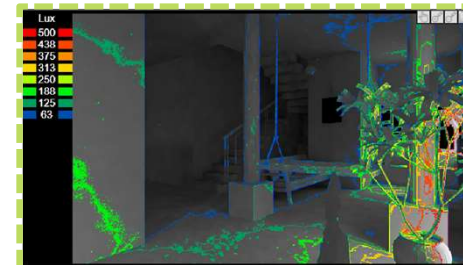
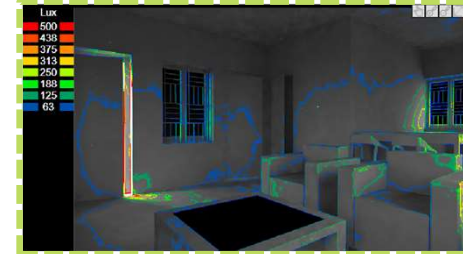
DECEMBER 21st

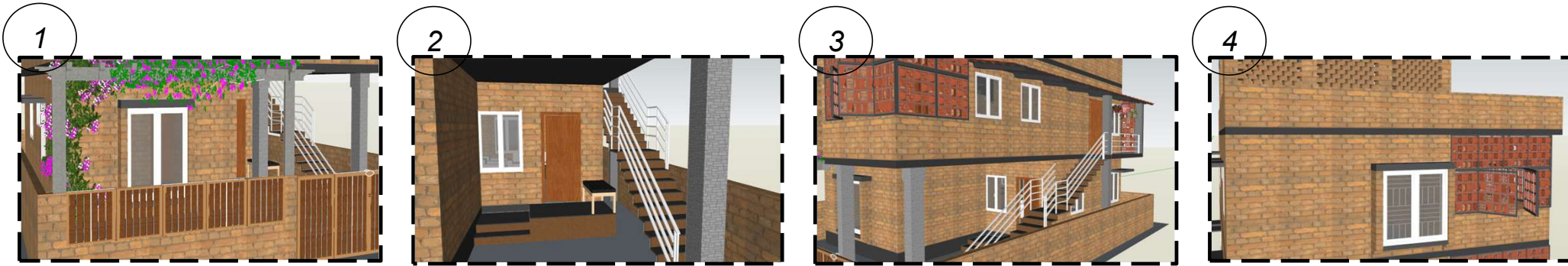


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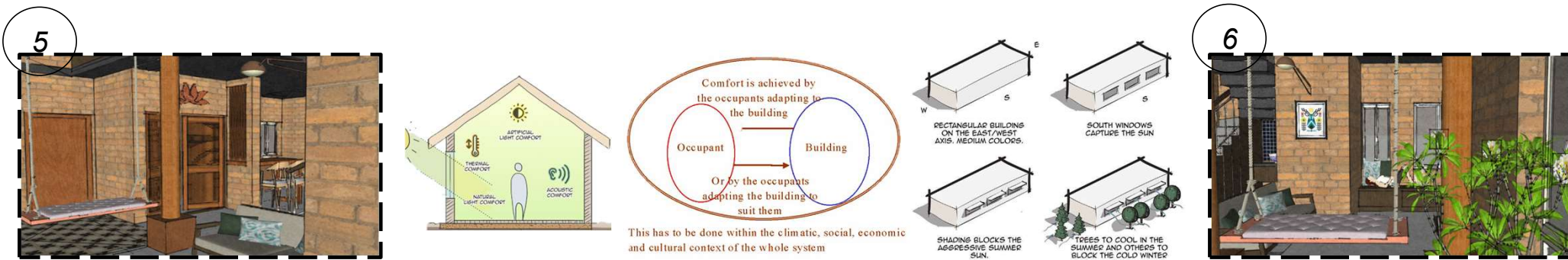
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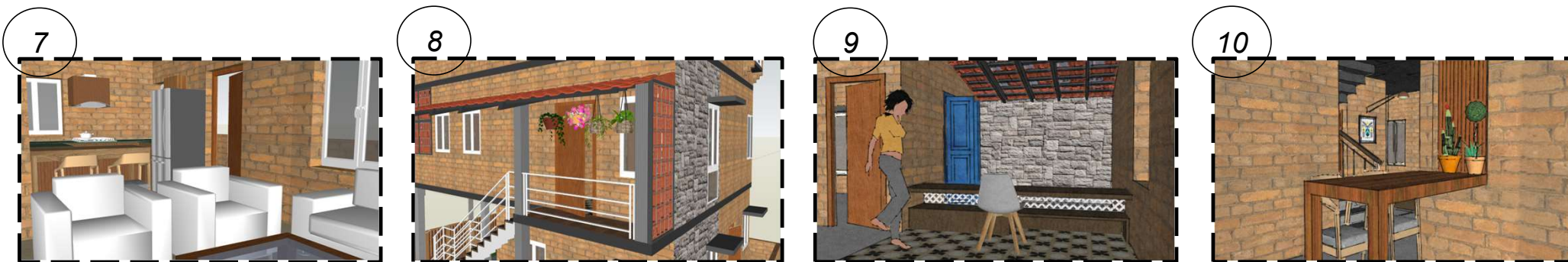




The exterior views of the south façade showing..... entry porch, pergola, compound wall, stairway, window grills & jail screens



The representation of the design strategy for the temperate zones & occupants comfort



The interior views of the residence showing..... Living cum kitchen space, break fast counter, study zone, puja room & balcony

The making of the CSEB blocks...

ON - SITE PREPARATION OF THE CSEB blocks.....



Making compressed earth blocks at site for the eco - sensitive clients, more and more millennials opting to go eco friendly and making safe, healthy and sustainable choices....



Filler slab using compressed earth blocks, helps replacing non structural concrete in a conventional RCC slab, making it less carbon intensive and lighter in weight as well.....



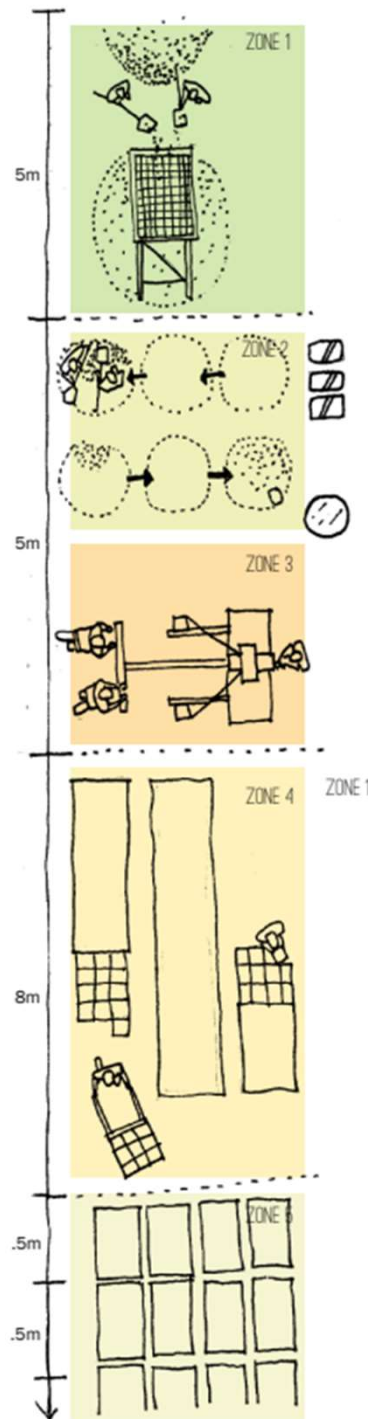
Finished vs Unfinished.

Pointing gives an even surface and looks neat.

The unfinished looks rustic and beautiful too.

For longer run we have to choose to do pointing.

This is thread pointing



SCREENING

Throw the soil through a wire mesh screen, with a size of 4-6mm. This stops very large gravel passing through ensuring that the soil has a reasonable mixture of sand, gravel, silt and clay

MEASURING

Fill a wheelbarrow with soil to the top and level with a ripper. Deliver to mixing area as per calculation

CHECK MOISUTURE

Drop a squeezed ball from 1 metre high. If ball crumbles into small pieces, moisture content is too low.

MOULDING

Put wet mixture into the machine, close lever and compress with handle. Block will come out after it has been adequately compressed.

QUALITY CONTROL

Regularly test the compression of blocks (the first block of every new mix) with a pocket penetrometer. Check block height with a block height guage.

HUMID CURING

Carefully stack the blocks under a thick plastic sheet for 2 days and 2 nights. The piles must be airtight and the blocks wet throughout this time.

FINAL CURING AND STACKING

Move bricks from humid curing into the stacking area for 28 days. Sprinkle blocks with water daily. Cover with coconut leaves to avoid direct sunlight.

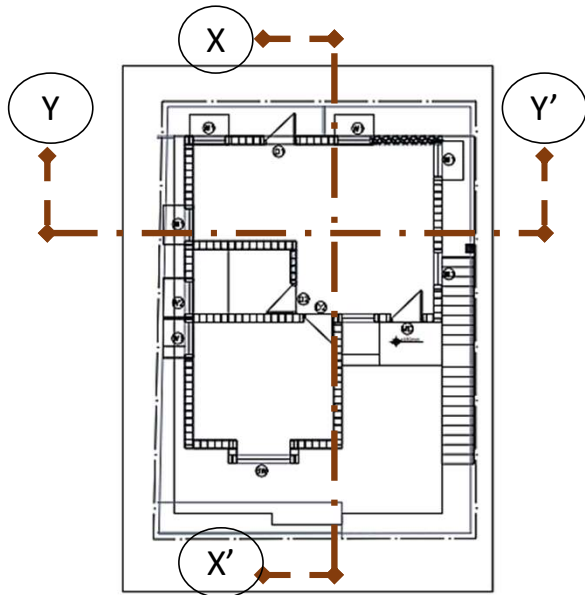
CSEB block qty...G.F

The calculation for the count or the quantity of the CSEB block in numbers is given by;

The total running length of the walls X total number of courses of 10' high wall
0.205 m

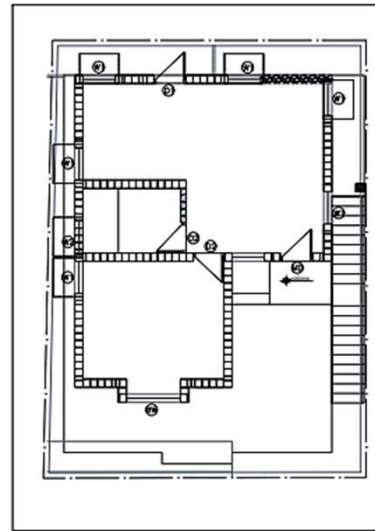
Where, number of courses in a 10' wall – 3000/115 = 26 courses....for a 9" wall thickness....

4TH COURSE 3RD COURSE 2ND COURSE 1ST COURSE



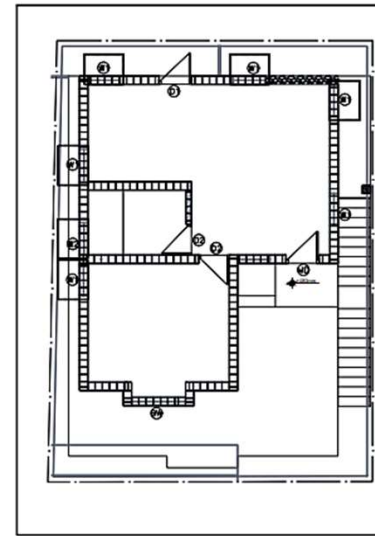
Door schedule- TERRACE FLOOR				
Name	No.	Size	Level	Remarks
D1	1	3000x2100	2100	Entrance door 1st F

Window schedule-TERRACE FLOOR				
Name	No.	Size	Level	Remarks
W1	1	3000x2100	2100	Window 1st F



Door schedule- SECOND FLOOR				
Name	No.	Size	Level	Remarks
D2	1	3000x2100	2100	Entrance door 2nd F

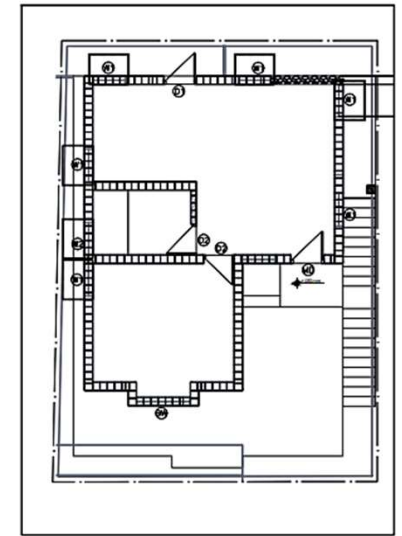
Window schedule-SECOND FLOOR				
Name	No.	Size	Level	Remarks
W2	1	3000x2100	2100	Window 2nd F



Door schedule- FIRST FLOOR				
Name	No.	Size	Level	Remarks
D3	1	3000x2100	2100	Entrance door 1st F

Window schedule-FIRST FLOOR				
Name	No.	Size	Level	Remarks
W3	1	3000x2100	2100	Window 1st F

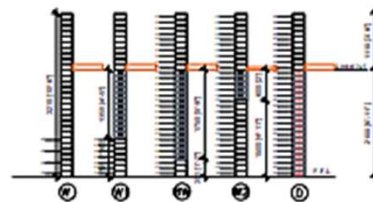
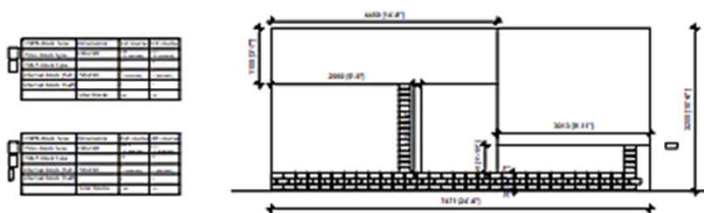
Window schedule-FIRST FLOOR				
Name	No.	Size	Level	Remarks
W4	1	3000x2100	2100	Window 1st F

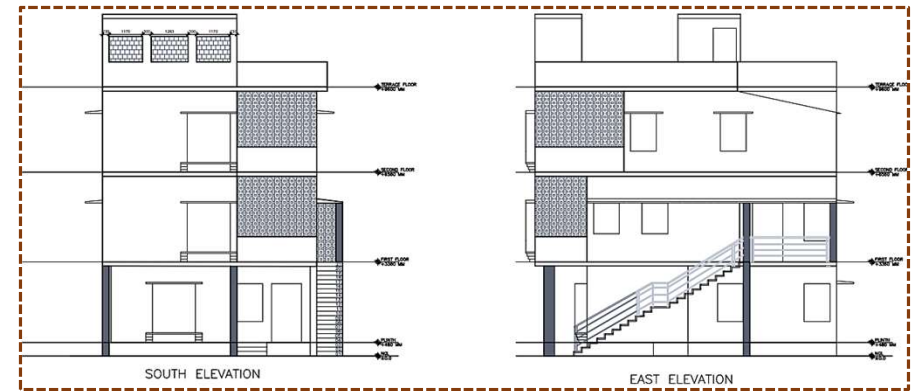
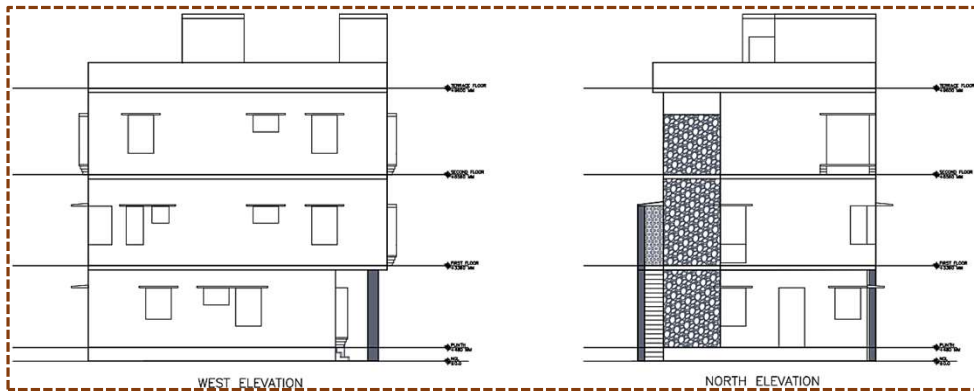


Door schedule- GROUND FLOOR				
Name	No.	Size	Level	Remarks
D4	1	3000x2100	2100	Entrance door

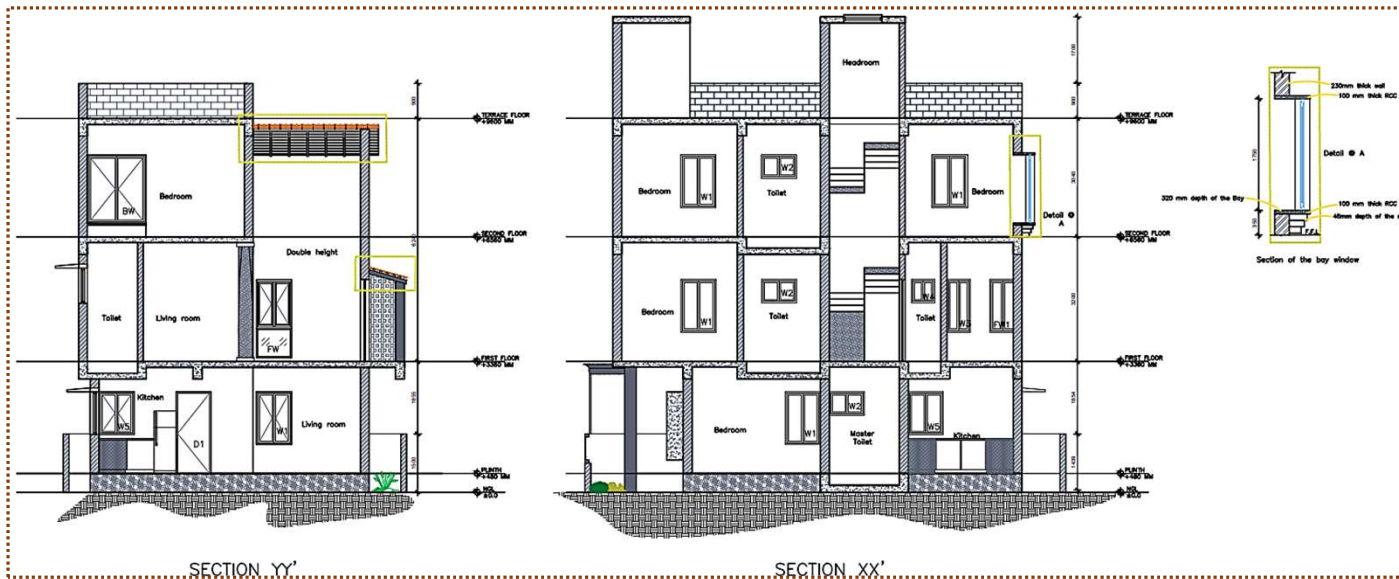
Window schedule-GROUND FLOOR				
Name	No.	Size	Level	Remarks
W5	1	3000x2100	2100	Window

Window schedule-GROUND FLOOR				
Name	No.	Size	Level	Remarks
W6	1	3000x2100	2100	Window



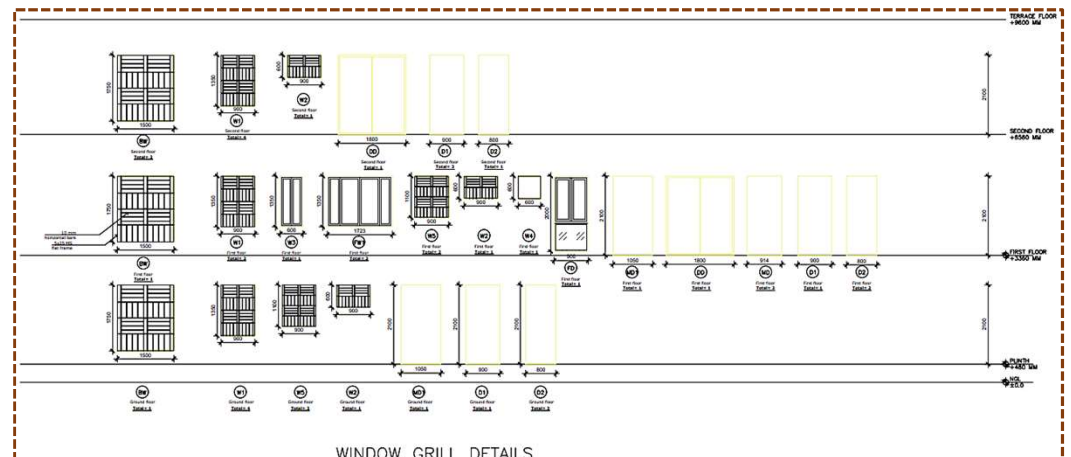


ELEVATIONS OF THE RESIDENCE



SECTIONS OF THE RESIDENCE...DEFINING THE HORIZONTAL & THE VERTICAL STRETCH & THE DETAILS OF THE BAY WINDOW

THE WINDOW TYPES, GRILL DESIGN, DETAILS & THE DOOR ELEVATION DETAILS ON EACH FLOOR

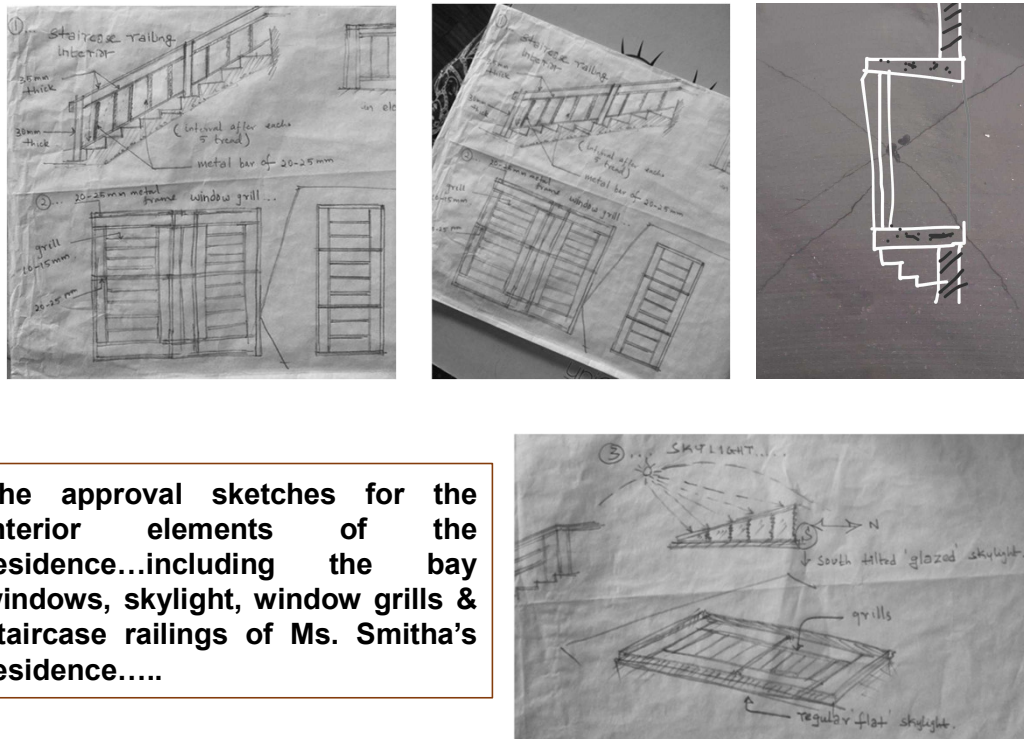




The foundation layout onsite of Ms. Smitha's residence...



The learnings of the cost – effective & sustainable approaches in design....

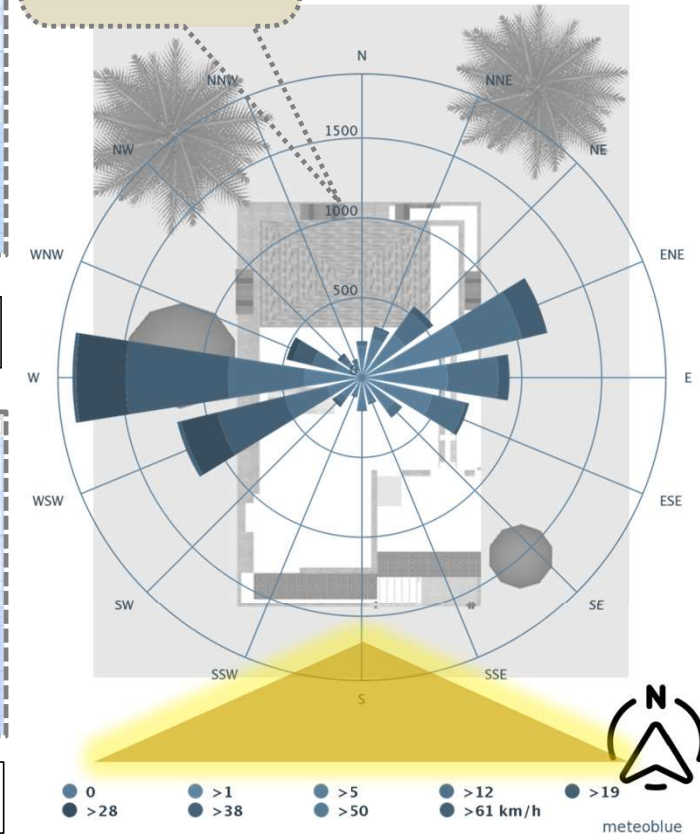


The approval sketches for the interior elements of the residence...including the bay windows, skylight, window grills & staircase railings of Ms. Smitha's residence....

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Project 2_Mr. Sunil – residence @ Nandha Prakruthi..., BANGALORE

Source:
https://www.meteoblu.com/en/weather/historyclimate/climate_modelled/india_el-salvador_3585481
<http://andrewmarsh.com/software/>



Summer solstice 21st JUNE

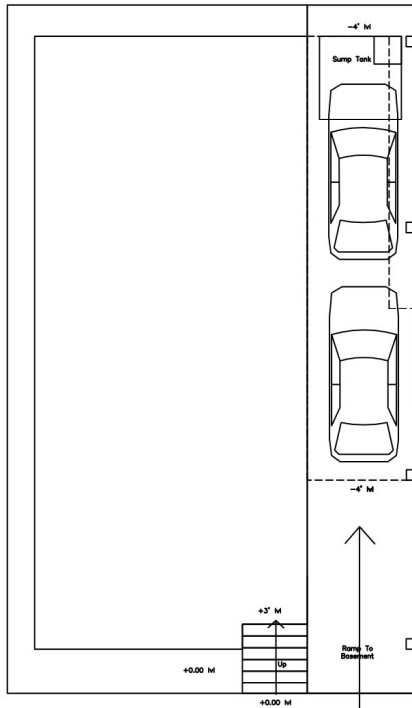
Summer solstice 21st DECEMBER

Fall equinox 23rd SEPTEMBER

Spring equinox 20th MARCH

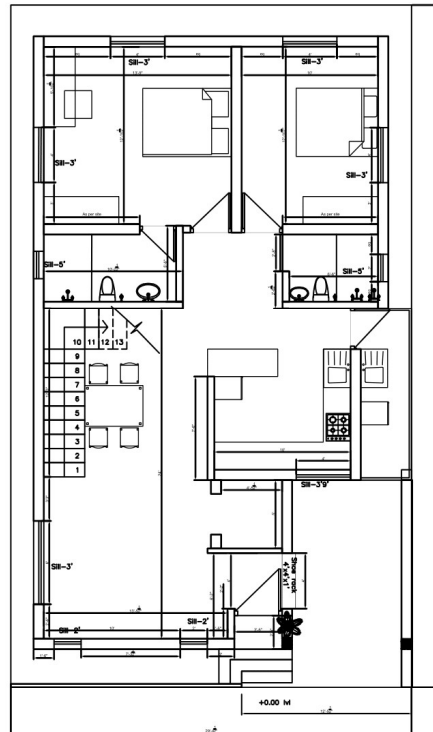
The sun path & the orientation of the building facing the south entry along with the wind flow direction...

Project 2 Mr . Sunil – residence @ Nandha Prakruthi....



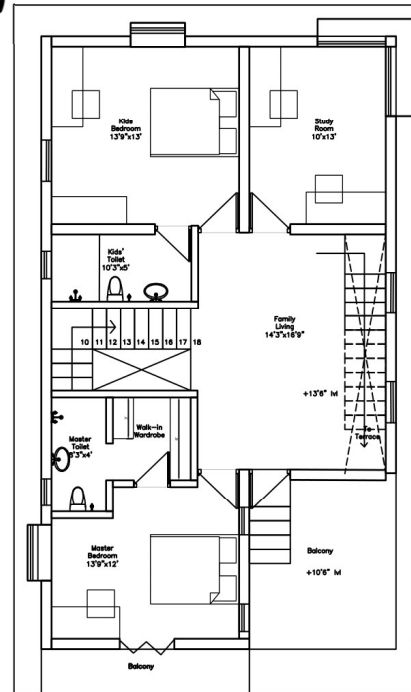
Basement Plan

Built Up Area– 400 Sqft



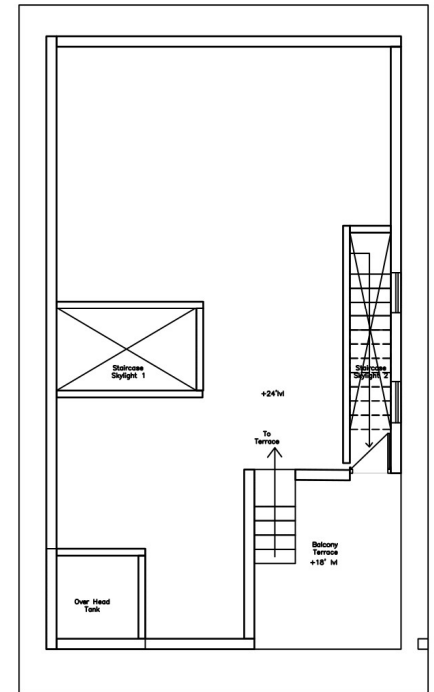
Ground Floor Plan

Built Up Area– 1075 Sqft



First Floor Plan

Built Up Area– 1020 Sqft
Balcony – 138 Sqft



Terrace Floor Plan

Built Up Area– 118 Sqft

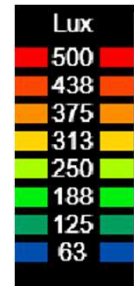
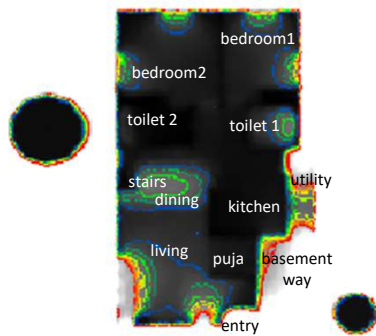


The residence floor plans |2D|.....

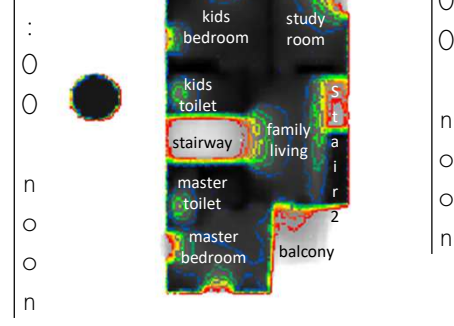
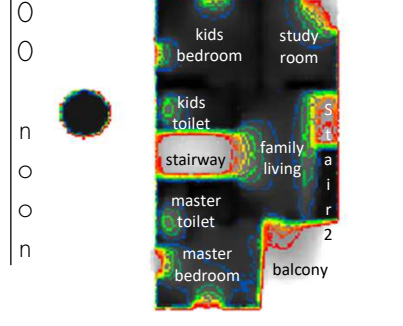
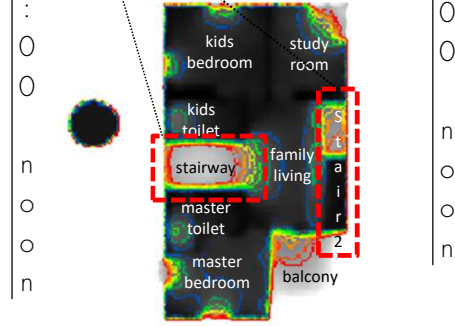
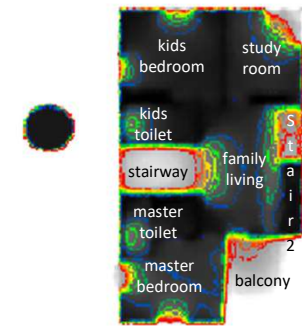
Project 2_Mr . Sunil – residence @ Nandha Prakruthi....

Daylighting analysis @ floor levels

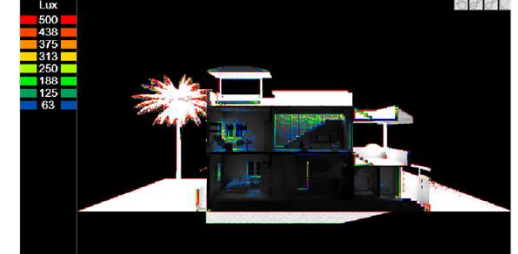
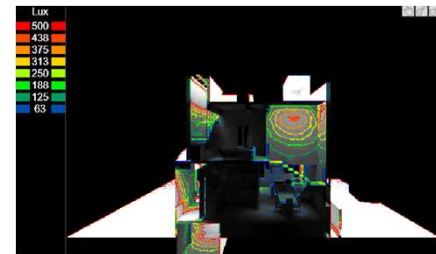
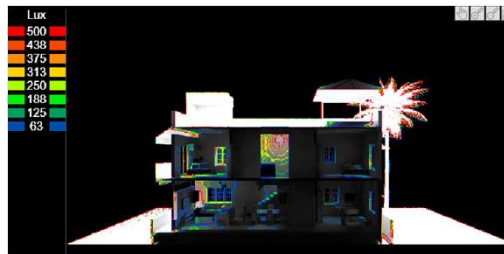
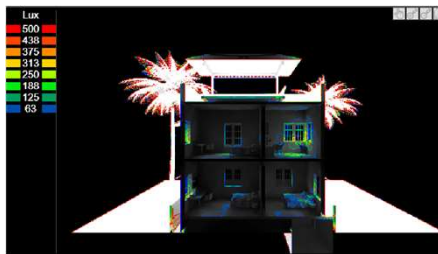
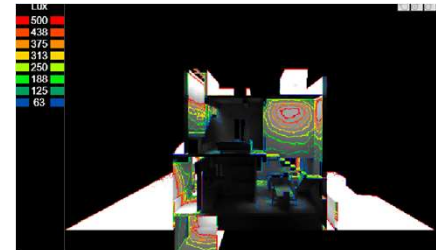
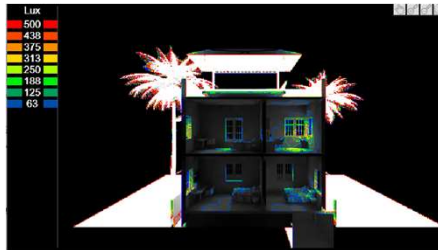
Ground floor



First floor



Project 2 Mr . Sunil – residence @ Nandha Prakruthi....

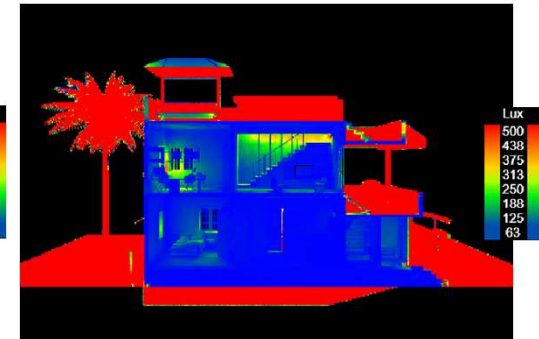
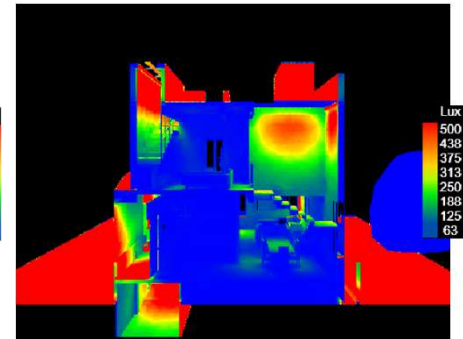
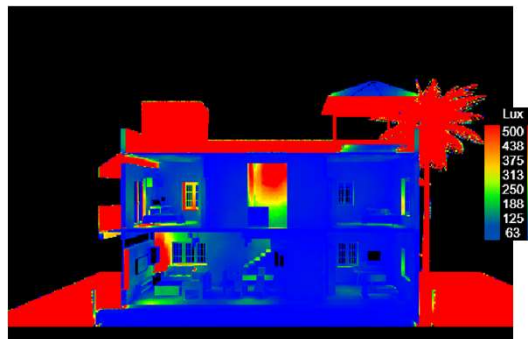
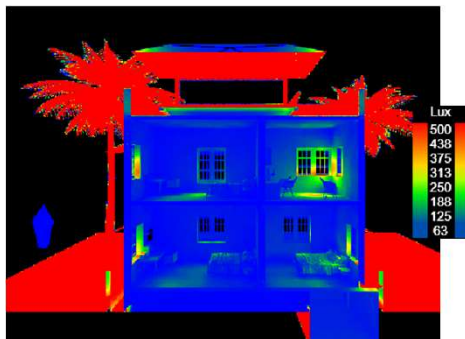


Cross section towards the NORTH...

Cross section towards the WEST...

Cross section towards the SOUTH...

Cross section towards the EAST...

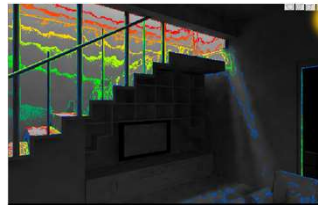


The cross section simulated for daylight analysis available in false colours in its lux level range.....towards each direction....

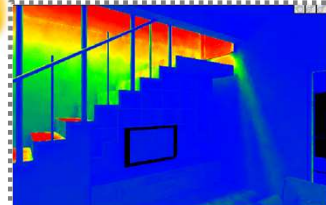
@ J U N E 2 1 s t @ D E C 2 1 s t

Project 2_Mr . Sunil – residence @ Nandha Prakruthi....

Lux levels in the view of family living room @ 1st floor...



1

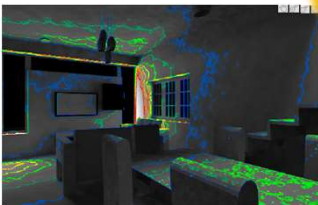


5

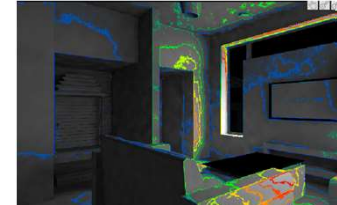
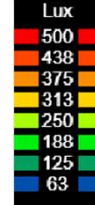
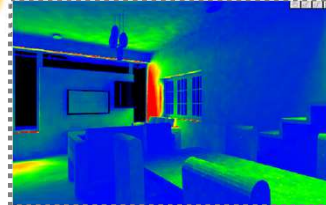


Lux levels in the view of bedroom 1 @ ground floor...

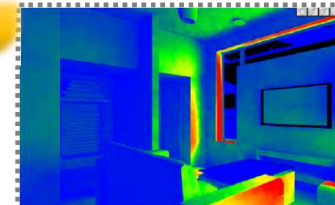
Lux levels in the view of living room @ ground floor...



2

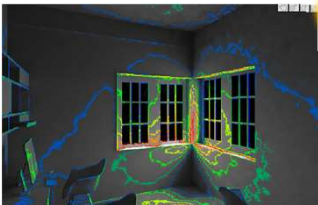


6

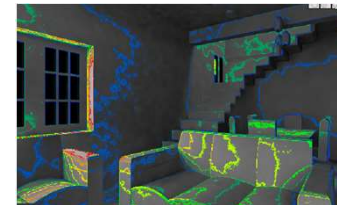
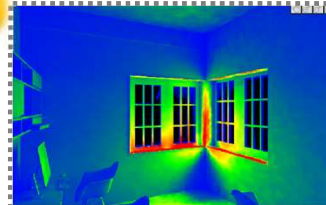


Lux levels in the view of living room & entry @ ground floor...

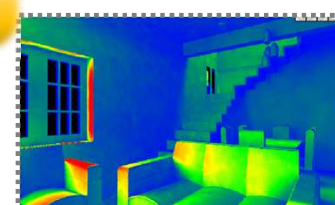
Lux levels in the view of study room @ 1st floor...



3

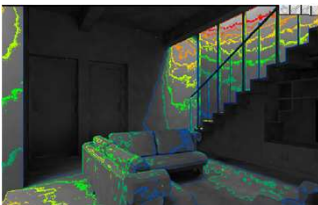


7

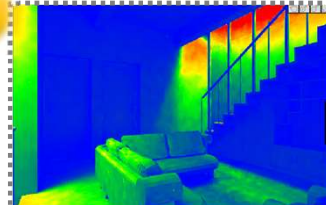


Lux levels in the view of living cum dining @ ground floor...

Lux levels in the view of stairway @ 1st floor...



4



8



Lux levels in the view of master bedroom @ first floor...

Iso contour lux level

False colour lux level

Iso contour lux level

False colour lux level

THE SITE VISIT @ NANDA PRAKRUTHI – dated 19/07/2022.....



The binding of the blocks using the soil & cement.....



The CSEB blocks of 300 mm thickness for the walls....



The upcycled door frames & wood from the old dilapidated projects.....



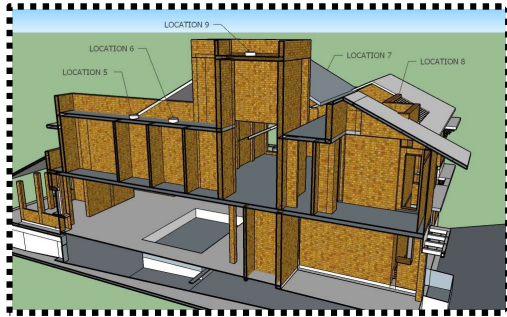
The residence raised up to the lintel level...are seen as per the progress of the work...and many of the interior parts & the part of basement is evident in the progress.....



THE SITE VISIT @ NANDA PRAKRUTHI – dated 04/08/2022.....



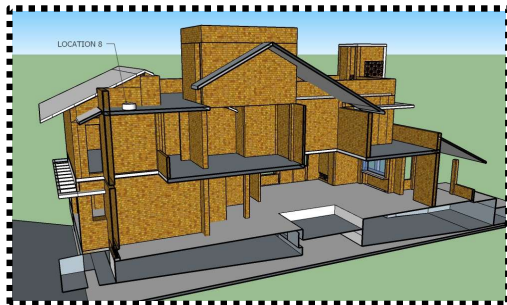
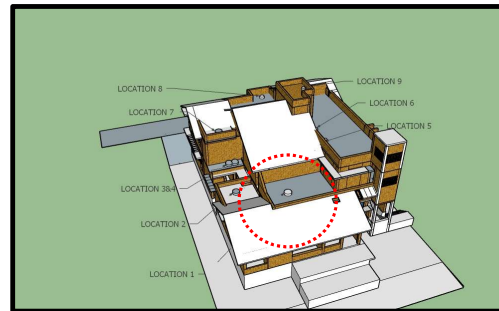
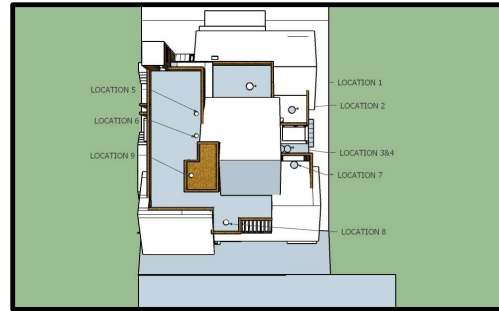
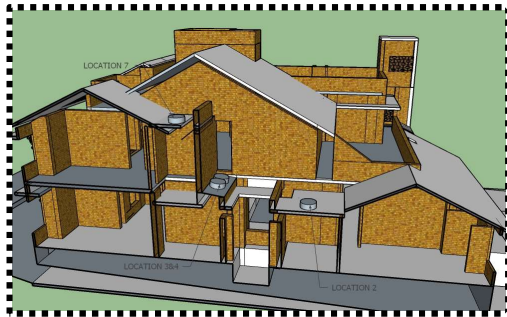
The skilled labours on – site covering the site basement & its offset by the locally available boulders near the site....



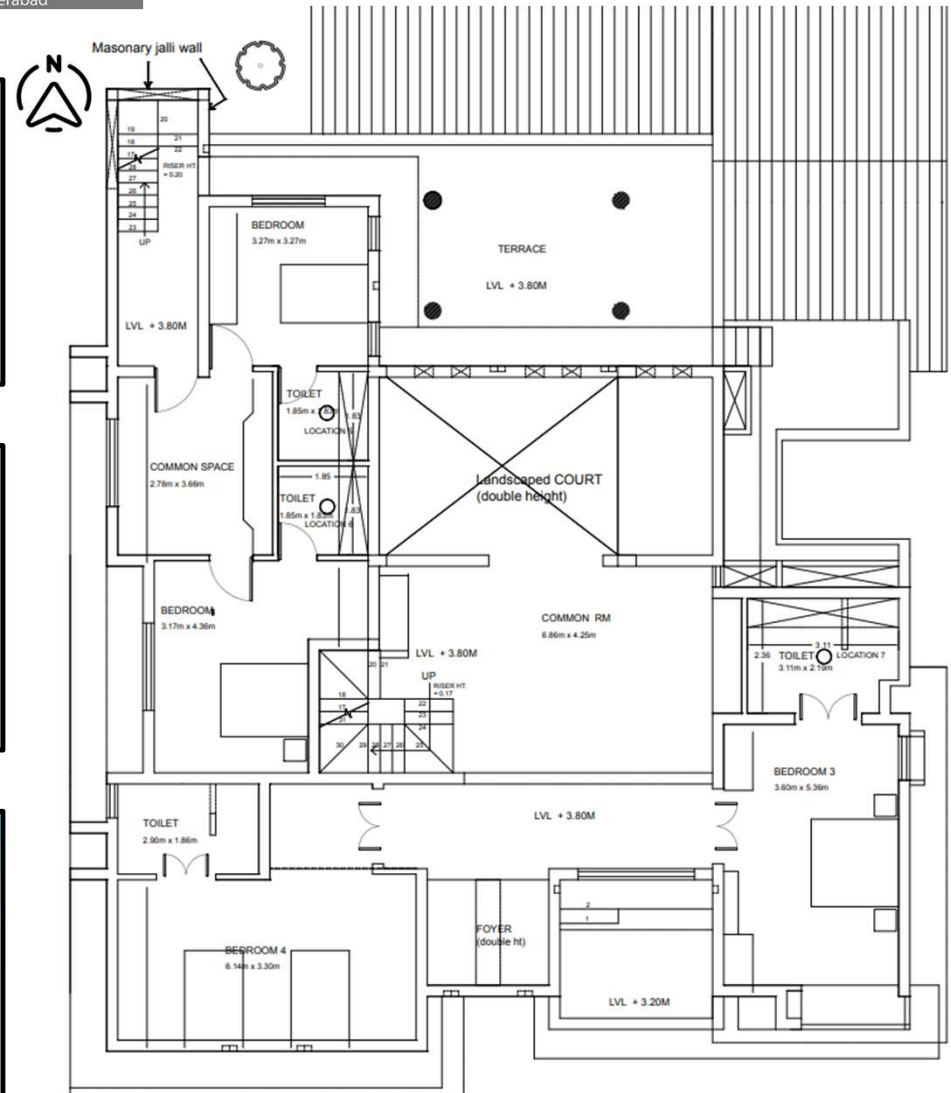
Locations in the roof plans
@ in their cross sections....



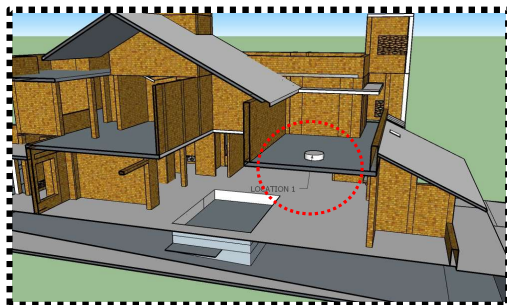
Project 3 Residence @ HYDERABAD....

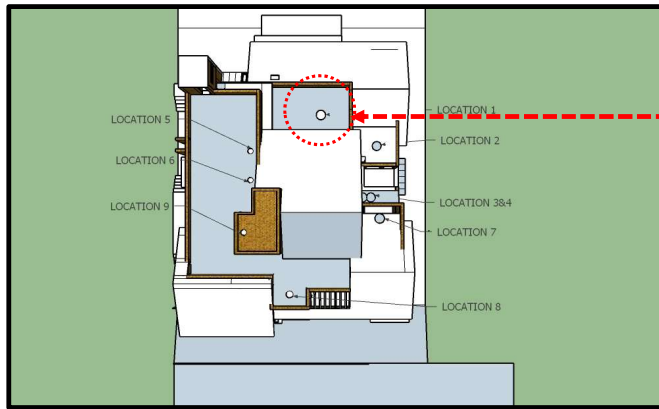


View of the residence

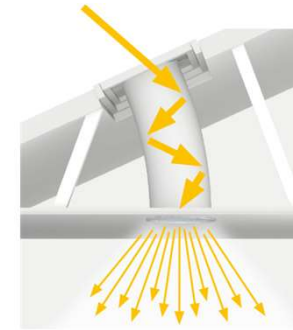


The locations of the solar tubes in the 1st floor



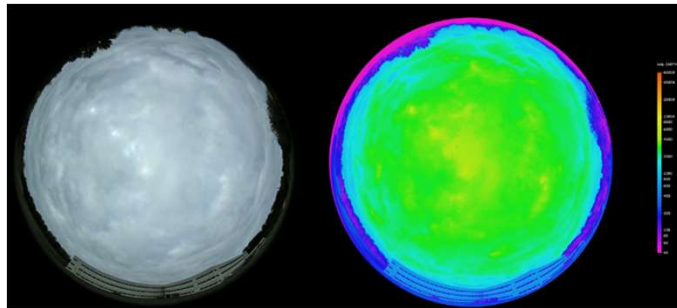


spots on the roof for the placement of light pipes |vs| regular skylights – LOCATION 1

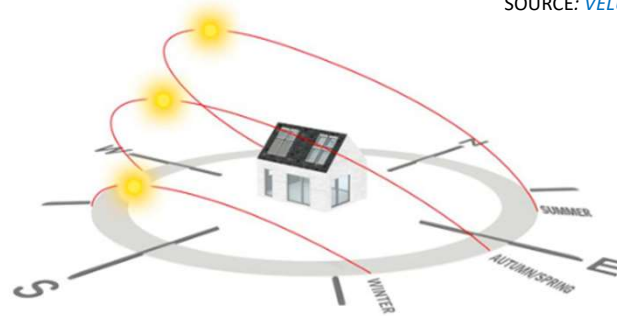


sunlight transport through Light pipes |CHOOSEN|

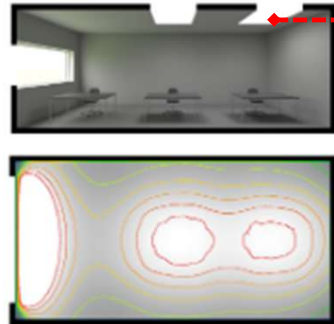
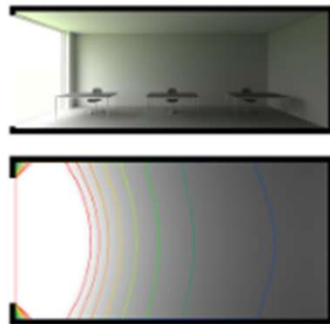
SOURCE: VELUX: <https://whyskylights.com/choosing-skylights/products/sun-tunnel-skylights>



luminance map of an overcast sky
|considered for simulation|



sun's paths on the winter solstice (shortest day),
the equinox (day and night almost equal), and the
summer solstice (longest day)



significant lux level variance with only window & with both the window &
skylight placements |CHOOSEN|

Curb Mounted Skylight Codes

FCM 1446 2 0 04

Model	Sizes	Interior finish	Cladding	Glazings
Curb mounted	1430"	0 None (FCM)	0 Aluminum	04 Clean, Quiet & Safe glass
FCM	1446"	2 White	9 Special	05 Low E/ Temp (75)
VCM	2222"			06 Impact
VCE	2230"			08 White lami
VCS	2234"			99 Special
Self flashed	2246"			
QPF	2270"			
	3030"			
	3046"			
	3434"			
	4622"			
	4646"			
	VCM only sizes			
	*QPF and Curb sizes			
	VCS only			

Curb Mounted Skylight Size Chart

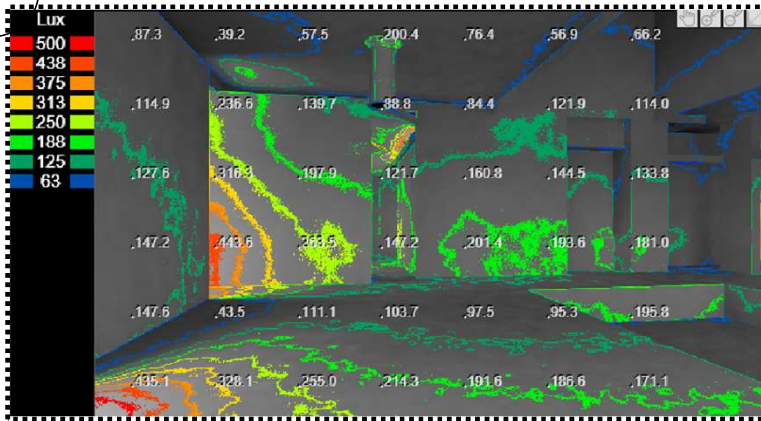
Outside curb / Max skylight clearance

17 1/2"	25 1/2"	33 1/2"	37 1/2"	49 1/2"
FCM, VCM, VCE, VCS	FCM, VCM, VCE, VCS	FCM, VCM, VCE, VCS	FCM, VCM, VCE, VCS	VCS
2222"	2222"	2222"	2222"	4622"
1430"	2230"	3030"		
FCM, VCM, VCE, VCS	FCM, VCM, VCE, VCS	FCM, VCM, VCE, VCS		
2234"	2234"	3434"		
FCM, VCM, VCE, VCS	FCM, VCM, VCE, VCS	FCM, VCM, VCE, VCS		
1446"	2246"	3046"		4646"
FCM	FCM			
	2270"			
	1100 Fixed			

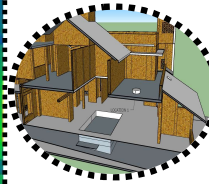
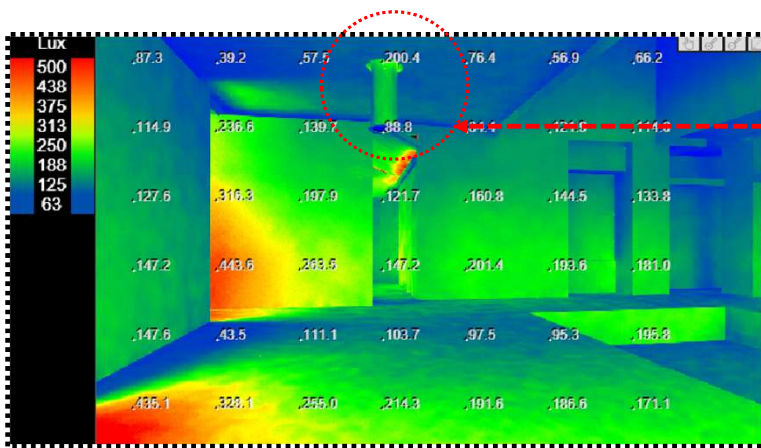
Daylight in sq ft

Custom FCM sizes available. Call for more information.

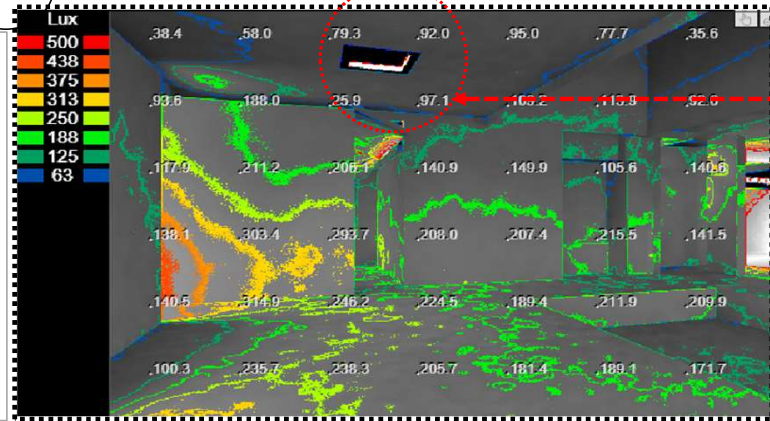
1



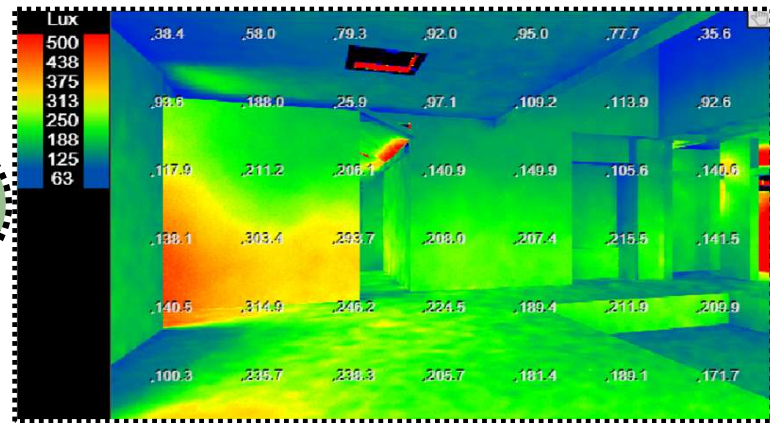
the lux levels achieved at LOCATION 1 of the ground floor through light pipes



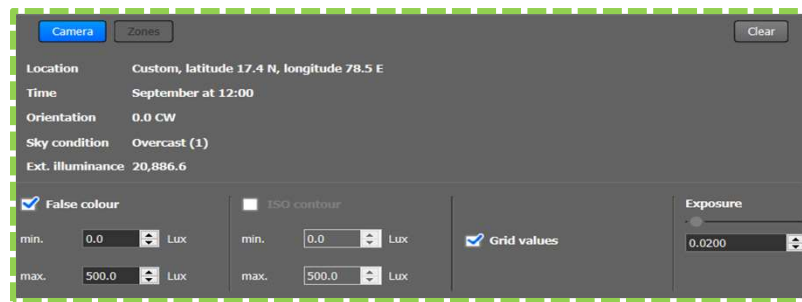
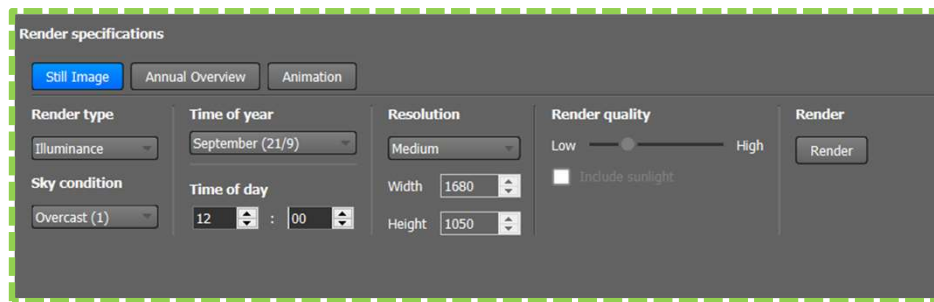
2



the better lux levels are achieved when regular skylights of the same clear glass type are used for the residence @ HYDERABAD



The same zones |LOCATION – 1| are simulated @ noon in sunlight for SEPTEMBER month through light pipes in case 1 & through regular skylights in case 2 which proves to be better lux levels with affordable options for installation



The appropriate settings applied for the simulation analysis through the VELUX daylight visualizer software tool