

PROFESSIONAL TRAINING REPORT

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

by

G. JANANI (40890006)



**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

JAN 2022



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)

(Est U/s(3) of UGC Act, 1956) Accredited with Grade "A" by NAAC (A Christian Minority Institution)

JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHEMMENCHERY, CHENNAI – 600119. TAMILNADU.

PHONE: 2450 1443/9941912481 INTERNET: www.sathyabama.ac.in

E-mail: archhod@sathyabama.ac.in



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

**PROFESSIONAL TRAINING PORTFOLIO (S89A PT)
DEC 2022**

Name of the Student : G. JANANI

Semester : III

Reg No. : 40890006

Batch : 2020-2022



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)

(Est U/s(3) of UGC Act, 1956) Accredited with Grade "A" by NAAC (A Christian Minority Institution)

JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHEMMENCHERY, CHENNAI – 600119. TAMILNADU.

PHONE: 2450 1443/9941912481 INTERNET: www.sathyabama.ac.in

E-mail: archhod@sathyabama.ac.in



SCHOOL OF BUILDING AND ENVIRONMENT

DEPARTMENT OF ARCHITECTURE

M. Arch (Sustainable Architecture)

BONAFIDE CERTIFICATE

This is to certify that the professional training (S89A PT) is the work of **G. JANANI (40890006)** who had undergone training in **DN ARCHITECTS** and has been monitored by the continuous assessment during **Dec 2021 to Jan 2022.**

DR.DEVYANI GANGOPADHYAY

DEAN,

School of Building and Environment

Department of Architecture

Submitted for Viva voce Examination held on _____

Internal Examiner

External Examiner



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)

(Est U/s(3) of UGC Act, 1956) Accredited with Grade "A" by NAAC (A Christian Minority Institution)

JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHEMMENCHERY, CHENNAI – 600119. TAMILNADU.

PHONE: 2450 1443/9941912481 INTERNET: www.sathyabama.ac.in

E-mail: archhod@sathyabama.ac.in



DECLARATION

I **G. JANANI** hereby declare that the Professional Training Report **1/DEC/2021 to 21/JAN/2022** done by me under the guidance of **Ar T. Dhanasekar** is submitted in partial fulfillment of the requirements for the completion of practical training session.

DATE : 21st Jan 2022

PLACE : Chennai

A handwritten signature in blue ink, appearing to read 'anjanimee'.

SIGNATURE OF CANDIDATE

ACKNOWLEDGEMENT

I am pleased to acknowledge my sincere thanks to Board of Management of **SATHYABAMA** 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 and Head of Department, School of building and Environment, Dept. of architecture for providing me necessary support and details at the right time during the progressive training session.

I would like to express my sincere and deep sense of gratitude to **Ar. T. Dhanasekar / Chief Architect** for his valuable guidance, suggestions and constant encouragement paved way for the successful completion of my project work. My sincere thanks to **Ar. Sheetal Amraotkar** Professional Training Coordinator for her motivation and guidance.

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.

CONFIRMATION LETTER

(Annexure –V)



5/2, II floor, sriram colony
abhiramapuram, chennai 18
O: + 91 637 971 16 18
M: + 91 988 430 68 69
www.dhanarchitects.com

01-12-2021
Chennai

To
G JANANI,
Department of Architecture,
Master of Architecture,
Sathyabama Institute of Science and Technology,
Chennai.

Dear Janani,
Sub: Confirmation of Professional training.

Thank you much for getting in touch with us regarding your professional training.

Further to you sending your portfolio and our discussions, I write to acknowledge our willingness to accept you to undergo your internship for a period of one month, starting from 1st December 2021.

Other standards such as working hours and etiquette at office environment would be conveyed separately on the date of joining. Looking forward to having you as part of our design team.

Wishing you all the best,

Thanks and regards

A handwritten signature in black ink is written over a circular purple stamp. The stamp contains the text 'DN ARCHITECTS' around the top and 'Chennai' around the bottom.

T. Dhanasekar M.Arch
architect | urban designer
COA No: CA/2009/43917

WEEKLY REPORT

(Annexure –VI)



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

Accredited with 'A' grade by NAAC
Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai - 600 119.

Phone: 044 - 2450 3150 / 3151 / 3152 / 3154 / 3155 Fax: 044 - 2450 2344
www.sathyabama.ac.in



DEPARTMENT OF ARCHITECTURE M. Arch (Sustainable Architecture)

Continuous Assessment Report for Professional training

(Continuous progress report of the trainee architect/Project Manager for the period of 30 working days in the office to be submitted to HOD by the Trainee attending the training session)

1. Name of the office / organization : DN ARCHITECTS
2. Address & Contact Number : #5, 2nd floor, CS Tower, 36, Bazullah road, T. Nagar, Chennai 17. Contact no: 9884306869
3. Name of the student : G. JANANI
4. Duration : From 01.12.2021 To 07.12.2021
5. Total No. of days : 7 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; which will be converted to the allotted 200 marks by the department.

Description of works	Excellent	Good	Fair	Poor	NA
Understanding of office culture and methodology		✓			
Active Participation in the Project activities	✓				
Documentation and tracking of project		✓			
Presentation Skills developed	✓				
Understanding of construction details & techniques		✓			
Participation and contribution in project meetings					✓
Understanding of codes and standards		✓			
Schedule preparation & tracking activities	✓				
Preparation / Management of drawings	✓				
Learning / Application of software in Projects	✓				
Preparation of concept for projects	✓				
Site Management / Discussion with clients					✓

Overall Grading*

A

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

7. Any other Remarks :

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



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

Accredited with 'A' grade by NAAC
Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai - 600 119.

Phone: 044 - 2450 3150 / 3151 / 3152 / 3154 / 3155 Fax: 044 - 2450 2344
www.sathyabama.ac.in



DEPARTMENT OF ARCHITECTURE M. Arch (Sustainable Architecture)

Continuous Assessment Report for Professional training

(Continuous progress report of the trainee architect/Project Manager for the period of 30 working days in the office to be submitted to HOD by the Trainee attending the training session)

1. Name of the office / organization : DN ARCHITECTS
2. Address & Contact Number : #5, 2nd floor, CS Tower, 36, Bazullah road, T. Nagar, Chennai 17. Contact no: 9884306869
3. Name of the student : G. JANANI
4. Duration : From 08.12.2021 To 14.12.2021
5. Total No. of days : 7 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; which will be converted to the allotted 200 marks by the department.

Description of works	Excellent	Good	Fair	Poor	NA
Understanding of office culture and methodology	✓				
Active Participation in the Project activities		✓			
Documentation and tracking of project	✓				
Presentation Skills developed	✓				
Understanding of construction details & techniques		✓			
Participation and contribution in project meetings					✓
Understanding of codes and standards	✓				
Schedule preparation & tracking activities	✓				
Preparation / Management of drawings	✓				
Learning / Application of software in Projects		✓			
Preparation of concept for projects	✓				
Site Management / Discussion with clients					✓

Overall Grading*

A

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

7. Any other Remarks :

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



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)

Accredited with 'A' grade by NAAC
Jepplaar Nagar, Rajiv Gandhi Salai, Chennai - 600 119.

Phone: 044 - 2450 3150 / 3151 / 3152 / 3154 / 3155 Fax: 044 - 2450 2344
www.sathyabama.ac.in



DEPARTMENT OF ARCHITECTURE M. Arch (Sustainable Architecture)

Continuous Assessment Report for Professional training

(Continuous progress report of the trainee architect/Project Manager for the period of 30 working days in the office to be submitted to HOD by the Trainee attending the training session)

1. Name of the office / organization : DN ARCHITECTS
2. Address & Contact Number : #5, 2nd floor, CS Tower, 36, Bazullah road, T. Nagar, Chennai 17. Contact no: 9884306869
3. Name of the student : G. JANANI
4. Duration : From 15.12.2021 To 21.12.2021
5. Total No. of days : 7 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; which will be converted to the allotted 200 marks by the department.

Description of works	Excellent	Good	Fair	Poor	NA
Understanding of office culture and methodology	✓				
Active Participation in the Project activities	✓				
Documentation and tracking of project	✓				
Presentation Skills developed	✓				
Understanding of construction details & techniques		✓			
Participation and contribution in project meetings					✓
Understanding of codes and standards		✓			
Schedule preparation & tracking activities	✓				
Preparation / Management of drawings		✓			
Learning / Application of software in Projects					
Preparation of concept for projects	✓				
Site Management / Discussion with clients					✓
Overall Grading*	A				

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

7. Any other Remarks : _____

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






SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)

Accredited with 'A' grade by NAAC
Jepplaar Nagar, Rajiv Gandhi Salai, Chennai - 600 119.

Phone: 044 - 2450 3150 / 3151 / 3152 / 3154 / 3155 Fax: 044 - 2450 2344
www.sathyabama.ac.in



DEPARTMENT OF ARCHITECTURE M. Arch (Sustainable Architecture)

Continuous Assessment Report for Professional training

(Continuous progress report of the trainee architect/Project Manager for the period of 30 working days in the office to be submitted to HOD by the Trainee attending the training session)

1. Name of the office / organization : DN ARCHITECTS
2. Address & Contact Number : #5, 2nd floor, CS Tower, 36, Bazullah road, T. Nagar, Chennai 17. Contact no: 9884306869
3. Name of the student : G. JANANI
4. Duration : From 22.12.2021 To 31.12.2021
5. Total No. of days : 10 Days

6. Evaluation of Performance criteria shall be on

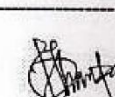
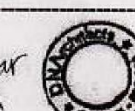
* Note: Kindly grade the student as per his/her overall performance in the office during the assessment month; which will be converted to the allotted 200 marks by the department.

Description of works	Excellent	Good	Fair	Poor	NA
Understanding of office culture and methodology	✓				
Active Participation in the Project activities	✓				
Documentation and tracking of project	✓				
Presentation Skills developed	✓				
Understanding of construction details & techniques		✓			
Participation and contribution in project meetings					✓
Understanding of codes and standards		✓			
Schedule preparation & tracking activities	✓				
Preparation / Management of drawings	✓				
Learning / Application of software in Projects					
Preparation of concept for projects	✓				
Site Management / Discussion with clients					✓
Overall Grading*	A				

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

7. Any other Remarks : _____

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

WORK DIARY

(Annexure –VIII)

DATE	PROJECT NAME	WORK DONE
01.12.2021	Mumbai Railway Station	Climate study
2 nd & 3 rd Dec	Mumbai Railway Station	Façade analysis
04.12.2021	Mumbai Railway Station	Façade – Shadow Analysis
5 th & 6 th Dec	Ponmar Site	Climate study
07.12.2021	Ponmar Site	Site Analysis
8 th & 9 th Dec	Ponmar Site	Design Evolution
10 th – 12 th Dec	Ponmar Site	Single line plan
13 th – 16 th Dec	Kambar Site	Climate study
17 th – 19 th Dec	Kambar Site	Site analysis
20 th – 22 nd Dec	Kambar Site	Solar analysis
23 rd – 25 th Dec	Kambar Site	Design evolution
26 th & 27 th Dec	Kambar Site	Single line plan
28 th - 31 st Dec	Ponmar Site	Presentation

Chief Architect Signature: Office seal:



Consolidated Certificate (Experience)

Annexure – IX



5/2, II floor, sriram colony
abhiramapuram, chennai 18
O: + 91 637 971 16 18
M: + 91 988 430 68 69
www.dhanarchitects.com

01-01-2022
Chennai

To Whomsoever it may concern

This is to certify that Ms. G JANANI, II year student of Master of Architecture, studying at Sathyabama Institute of Science and Technology has successfully completed her professional training with us from 01-12-2021 to 31-12-2021.

During her tenure, she has worked on in-depth climatic analysis of two sites. The detailed documents prepared by her were presentable to the client and as well become a blueprint for further development of the design.

Wishing her the best of success in her future endeavors,

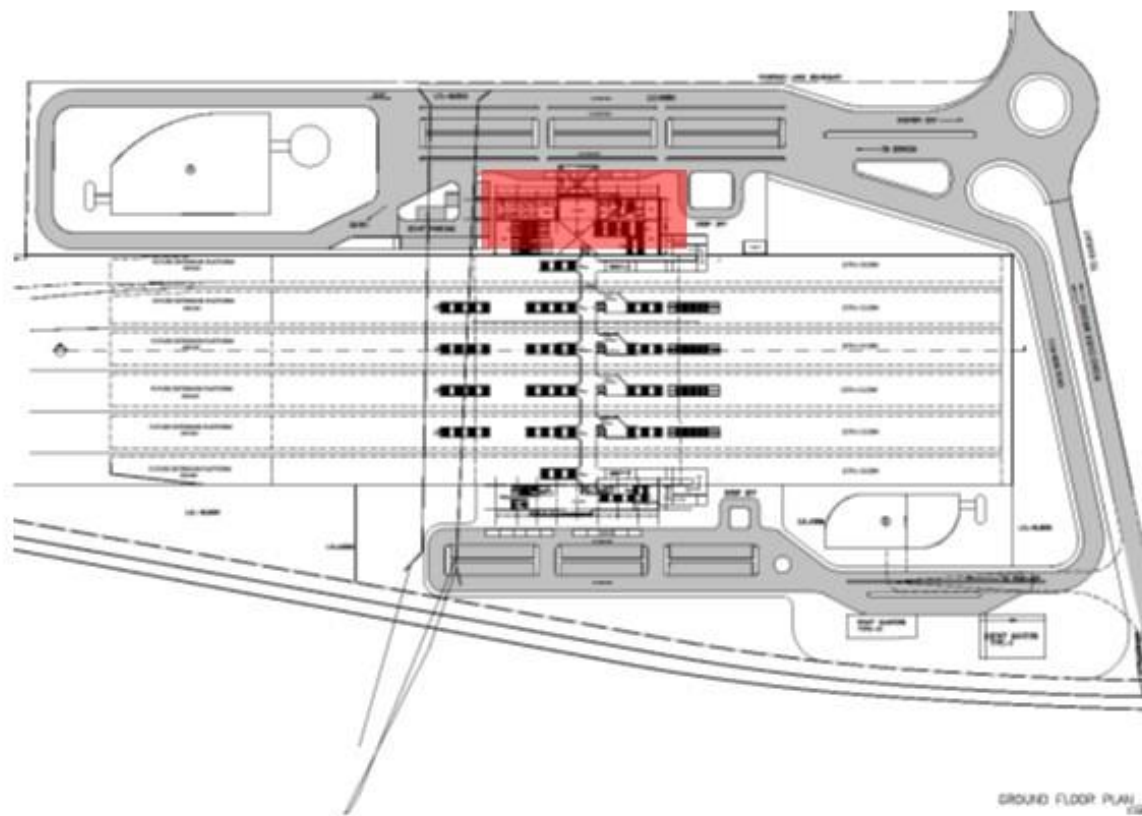
Thanks and regards,

T. Dhanasekar M.Arch
architect | urban designer
COA No: CA/2009/43917

TABLE OF CONTENTS

CHAPTER NO	TITLE	PAGE NO
1.	Mumbai Railway station - Facade analysis	11
2.	Ponmar site – Residence	15
3.	Kambar Site – Residence	19

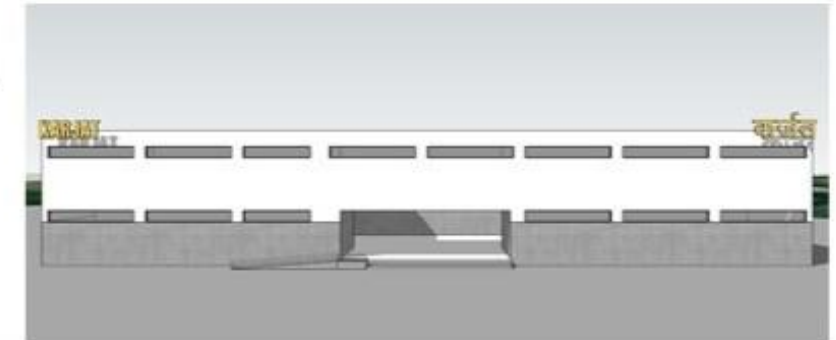
MUMBAI RAILWAY STATION FACADE ANALYSIS



SHADOW ANALYSIS

BARE FACADE

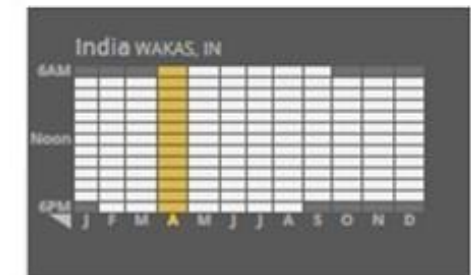
Existing Bare Facade



Total Daylight Duration - 13 hours/day
Daylight hours on the Wall - 6.9 hours

Hottest month in the climate of Mumbai is April

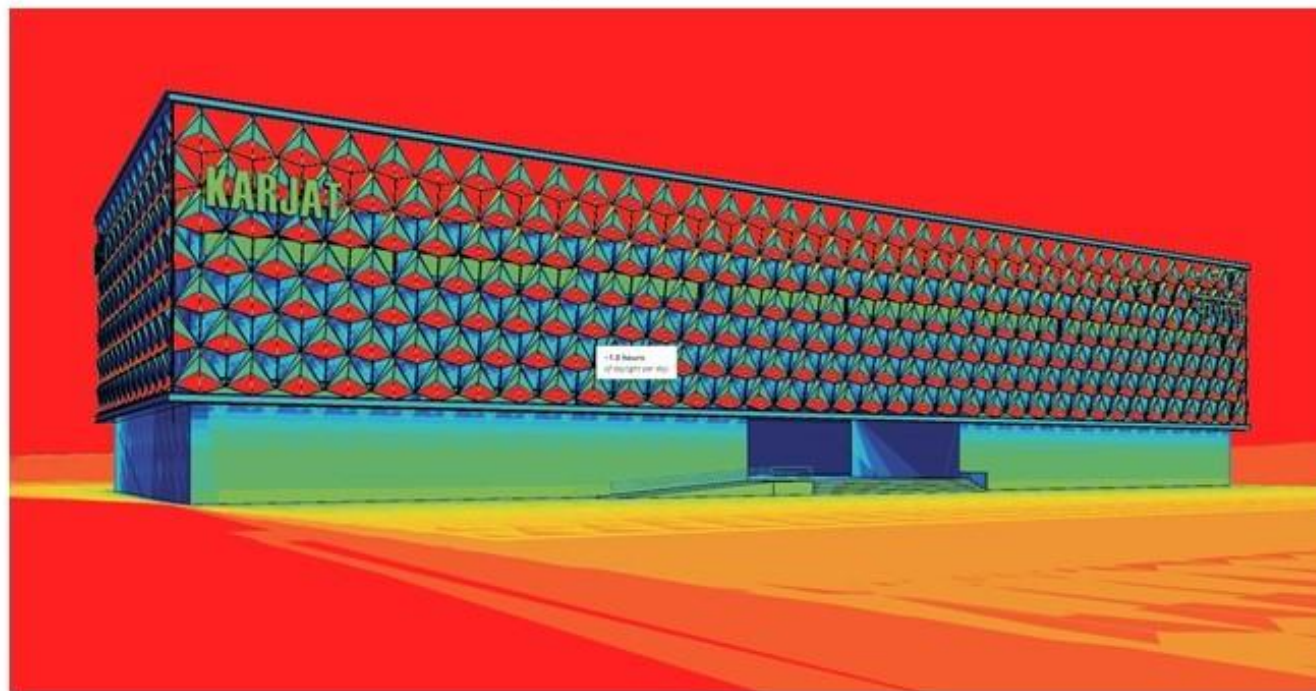
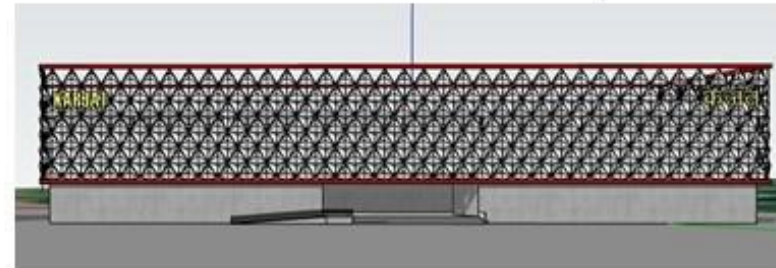
APRIL



SHADOW ANALYSIS

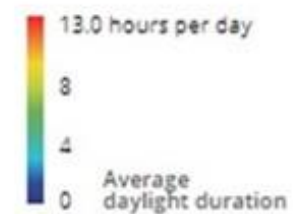
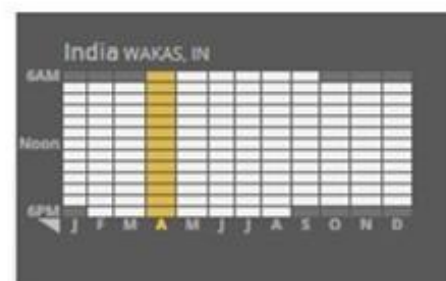
FACADE SCREEN

Proposed Facade

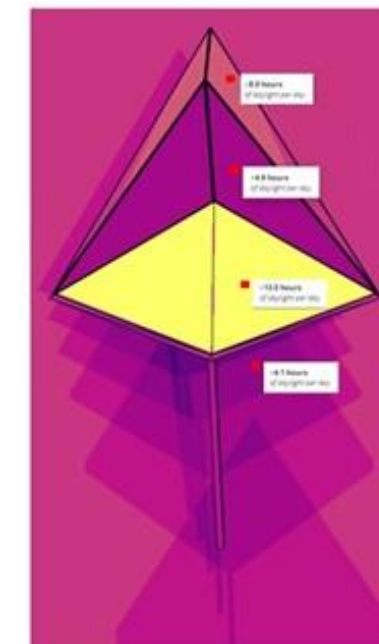
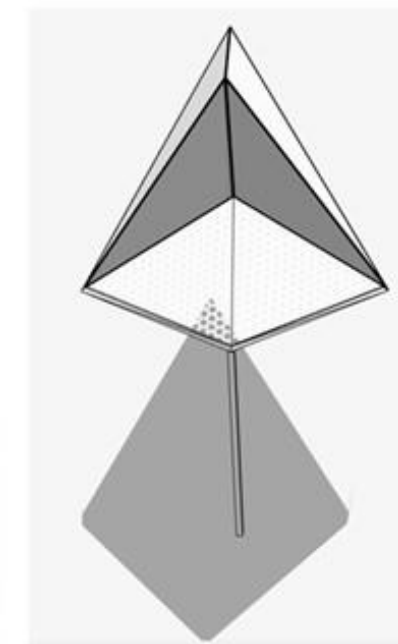


Total Daylight Duration - 13 hours/day
Daylight hours on the Wall - 0.5 to 4 hours

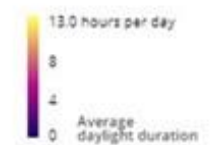
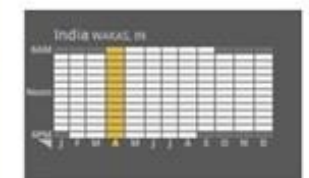
APRIL



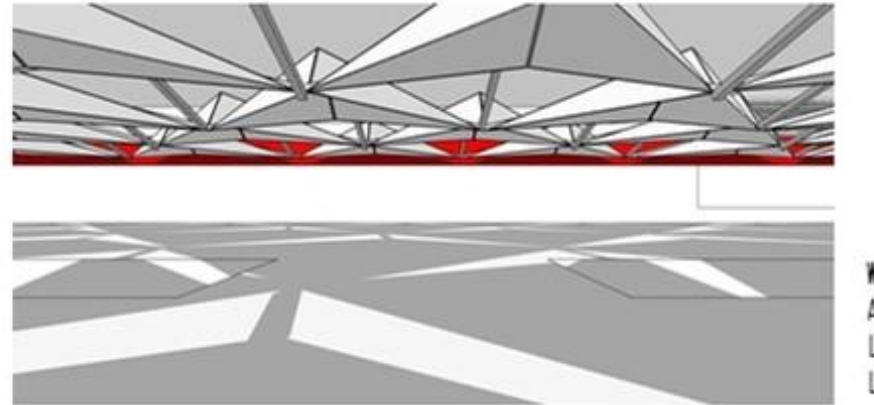
Daylight received in Single Unit of Facade Screen



APRIL



The Facade Screen extended outside the wall creates a pattern that shades the entire wall from 0.5-4 hours and Shades Efficiently.



As a Result the Facade screening shades the wall Efficiently and the number of hours shaded is 4 hours

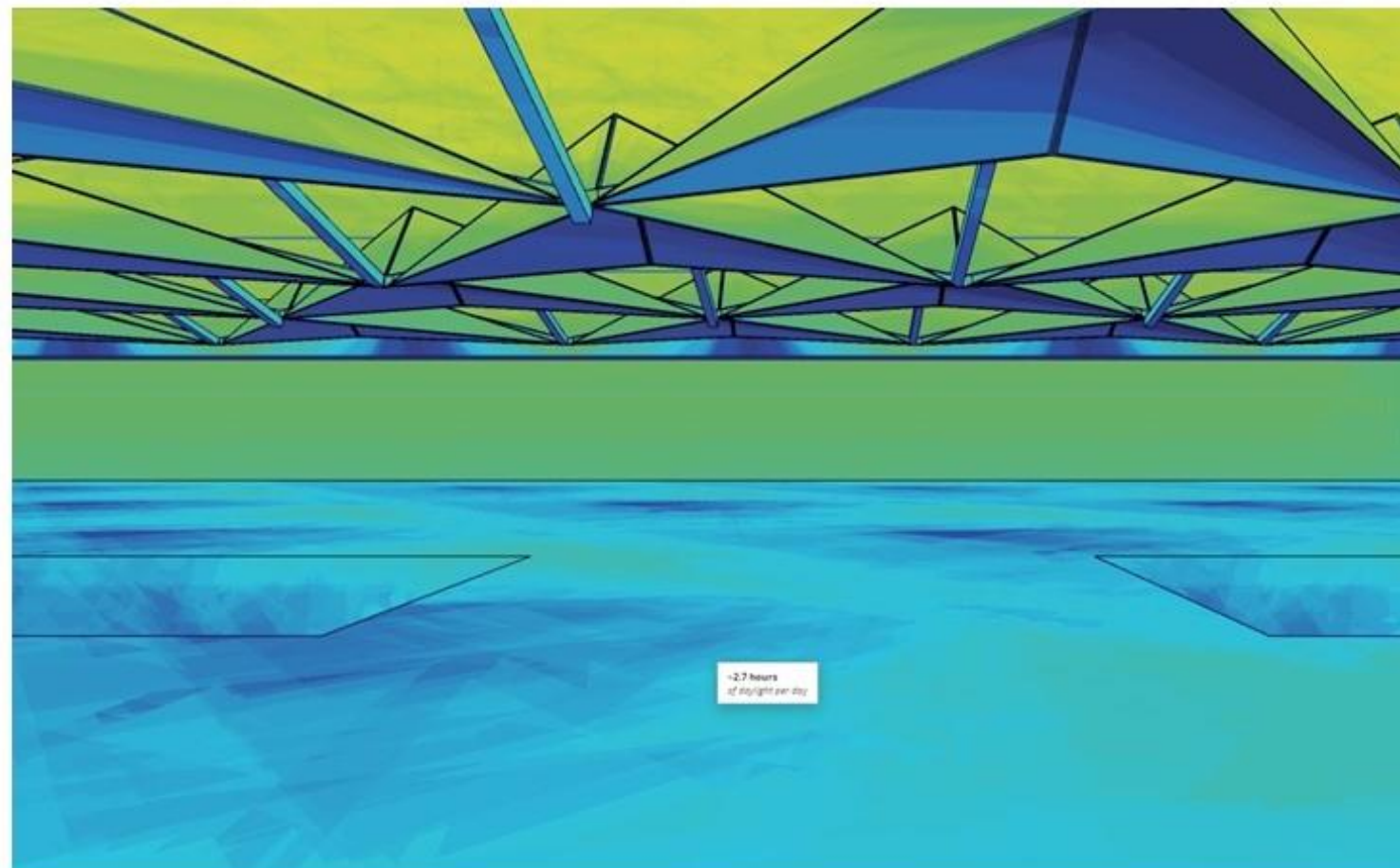
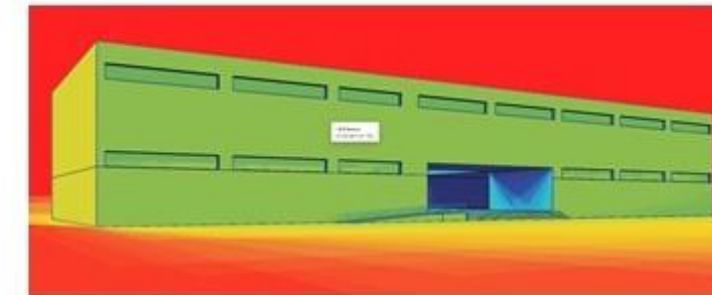
SHADOW ANALYSIS - ANNUAL

Average Annual Daylight hours on the Wall without Facade screening

- 6.6 hours/day

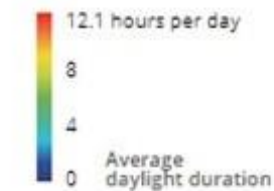
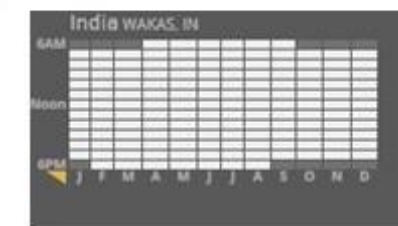
Average Annual Daylight hours on the Wall with Facade screening

- 2.7 hours/day



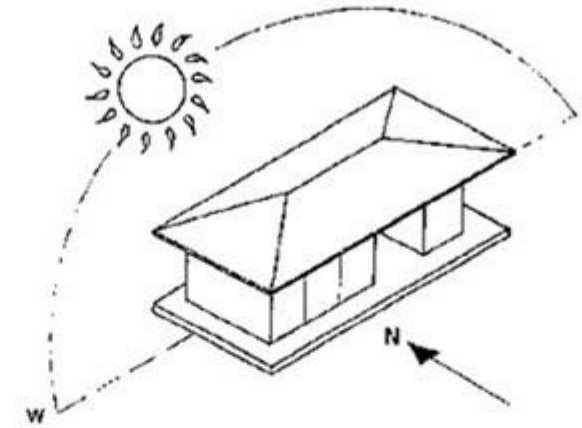
F
A
C
A
D
E

ANNUAL



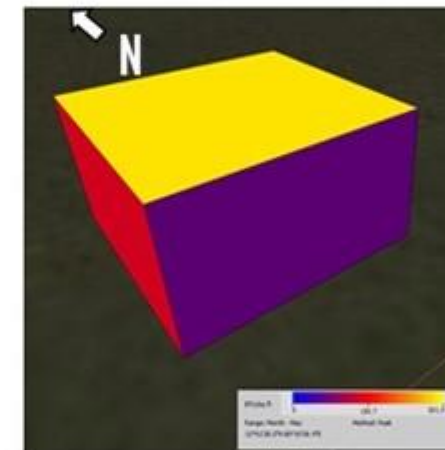
W
A
L
L

CLIMATE ANALYSIS



ORIENTATION

Buildings should be oriented with their **longer axis facing North - South** aligned perpendicular to the prevailing winds to facilitate maximum air-flow and cross ventilation through the building.



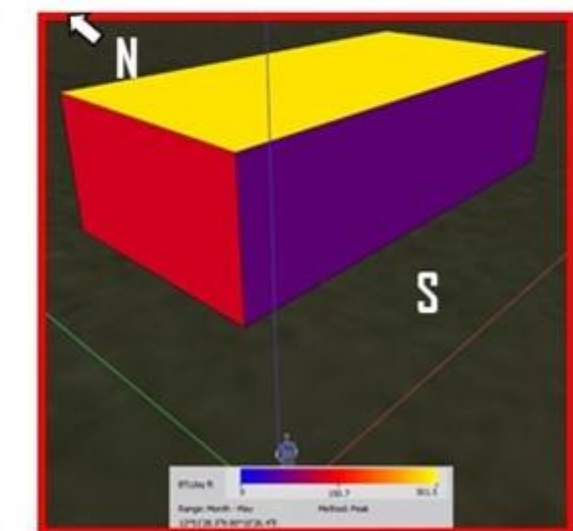
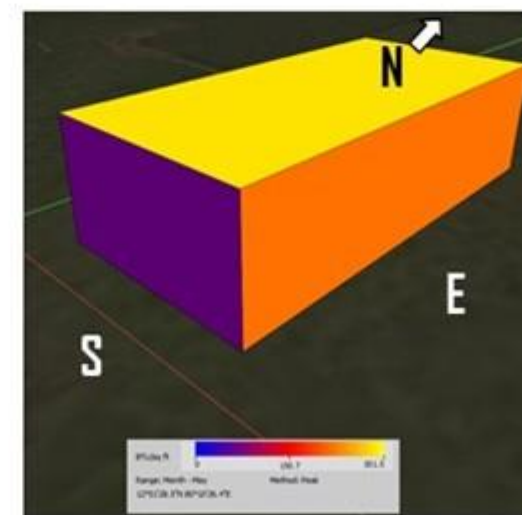
DIRECTION	SUMMER (MAY)	WINTER (JAN)
NORTH	68.5 BTU	21.44 BTU
SOUTH	26.54	168.2
EAST	217.4	201.1
WEST	116.3	95.4
ROOF	284.8	237.7

PONMAR

ANALYSIS

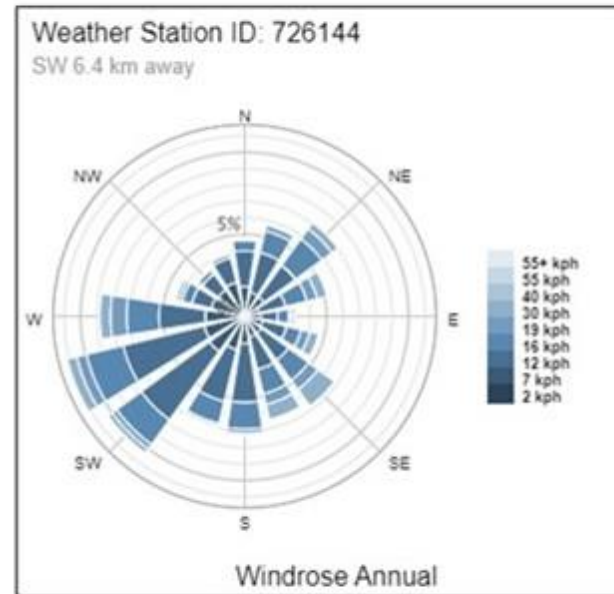
Location : Chennai
Building Type : Residential

East & West - Critical facades
Longer axis should be North - South
Most Occupied spaces should be avoided in East & West



CLIMATE ANALYSIS

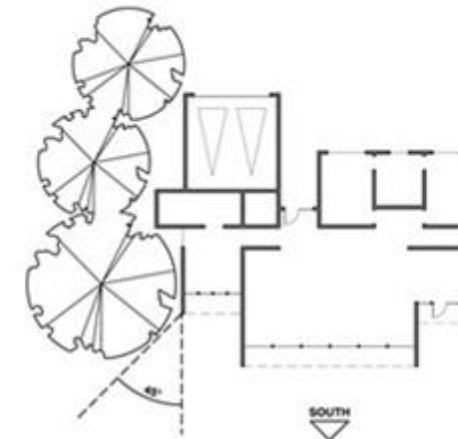
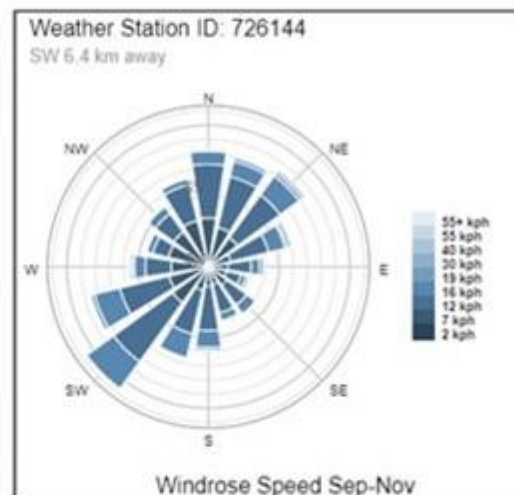
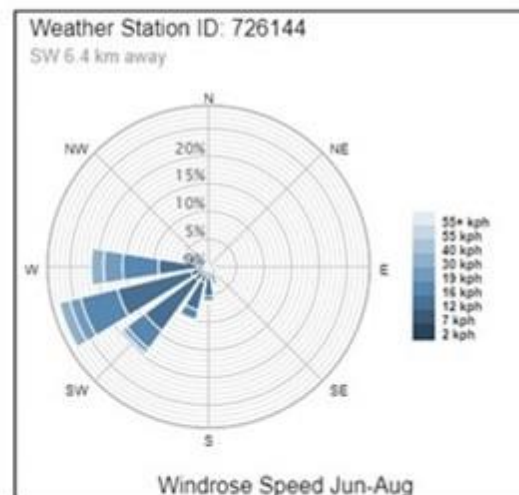
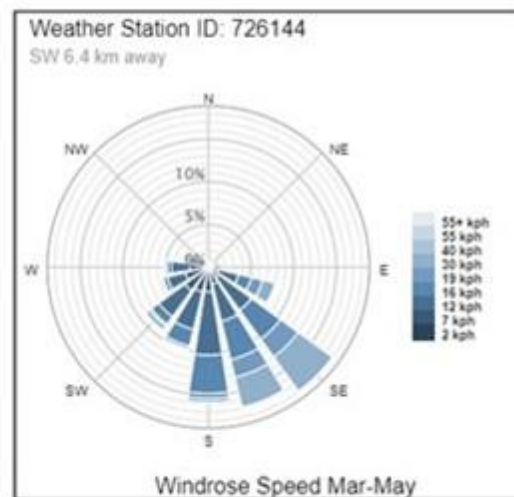
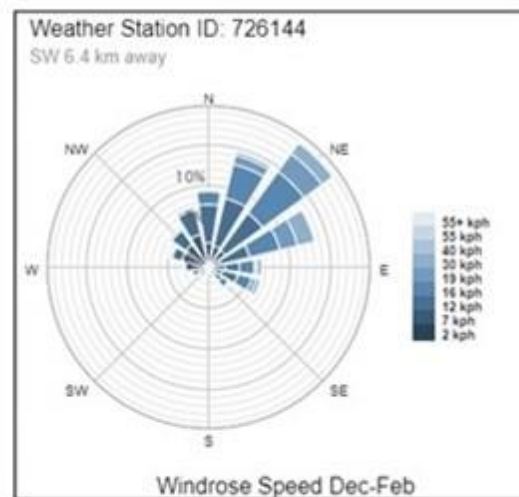
DESIGN RECOMMENDATION



WIND DIRECTION

The most prevailing winds is **Southwest** between the end of May to end of September and the **Northeast** during the rest of the year.

NE - Dec - Feb
SE - Mar - May
SW - Jun - Aug
SW & NE - Sep - Nov



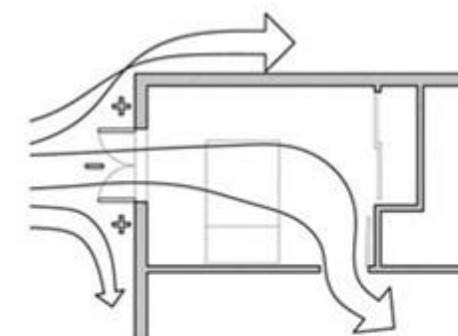
Use **Vegetation on West** to minimize Heat gain



Minimize Glazing in West facade to reduce Summer & fall Afternoon heat gain

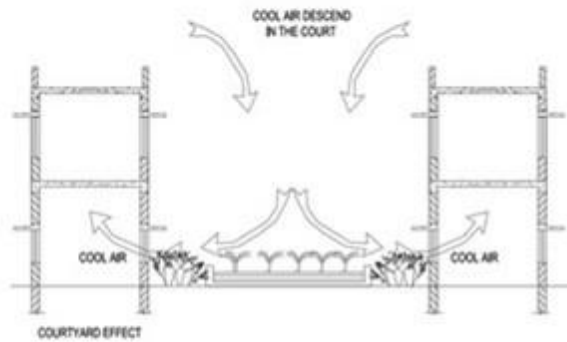


Orient most of the Window opening & Glazing to **North** shaded by Vertical fins



Rooms with **good cross ventilation**. Windows should be well shaded & oriented to prevailing wind

DESIGN RECOMMENDATION



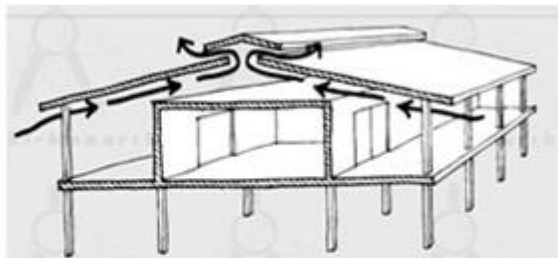
Courtyard helps Cool air sinks into the court & enters the living space and Self shading



Tall operable windows with deep Overhangs & Verandahs

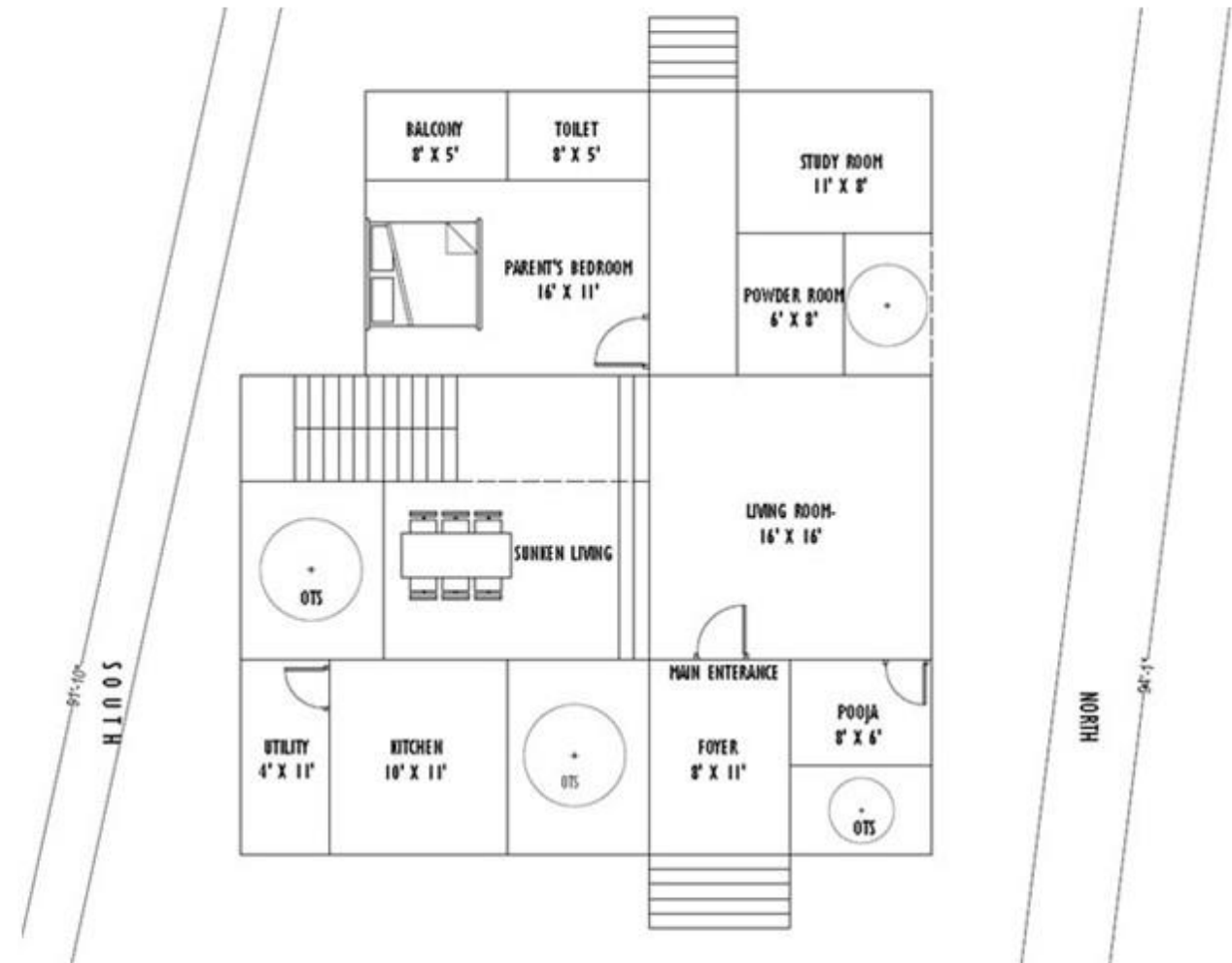


Shaded Outdoor buffer zone (Verandah) oriented to prevailing breeze

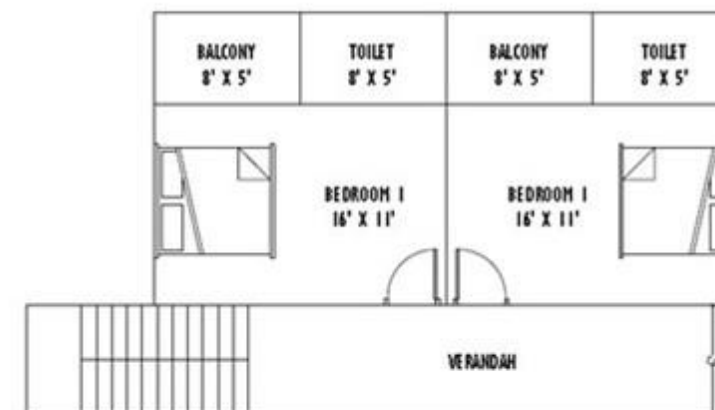


Fly roof will shade the core building & cool breeze to flow beneath

DESIGN EVOLUTION-SINGLE LINE PLAN



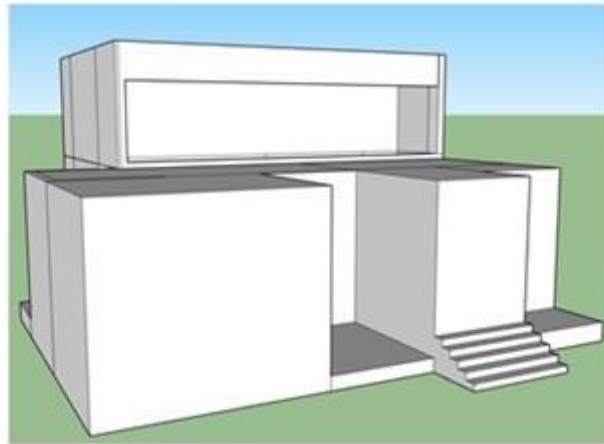
GROUND FLOOR PLAN



FIRST FLOOR PLAN

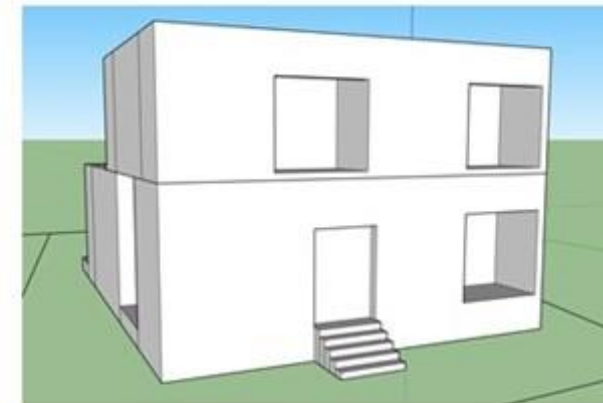
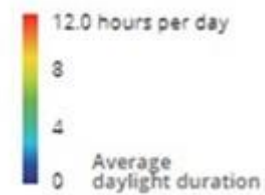
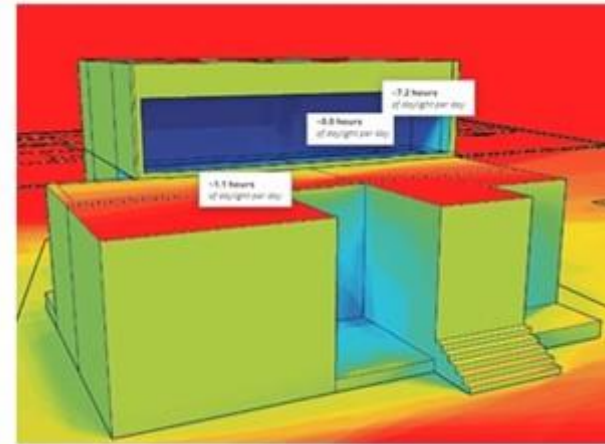


DESIGN RECOMMENDATION



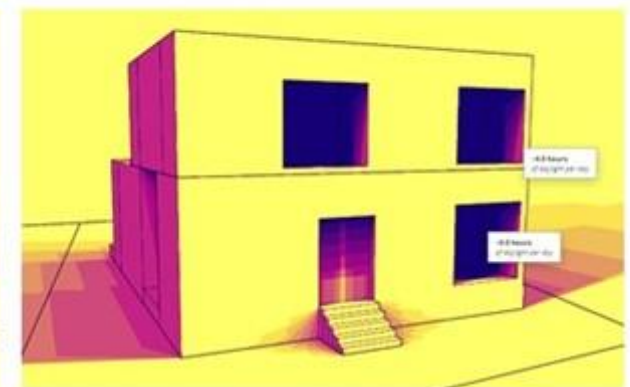
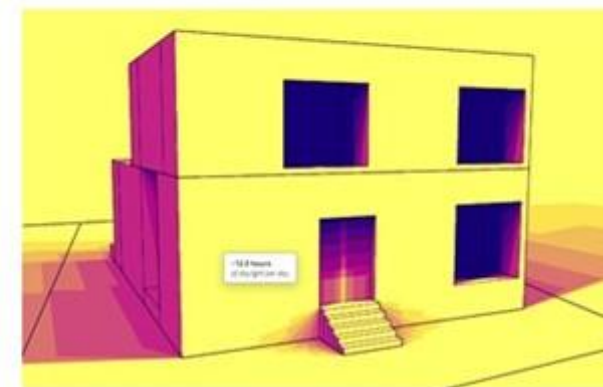
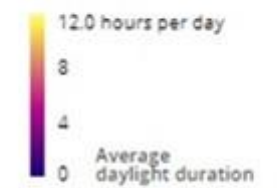
VERANDAH - IN EAST

Outer wall in east - **7.2** daylight hours/day Annually
 Inner wall - **0-1.1** daylight hours/day Annually



RECESSED BALCONY - IN WEST

Outer wall in West - **12** daylight hours/day
 Inner wall - **0 - 4** daylight hours/day



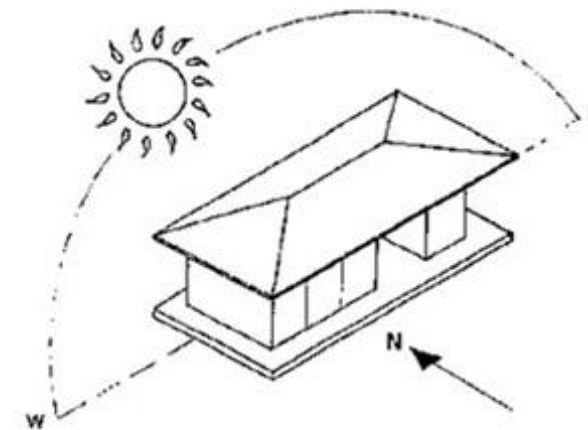
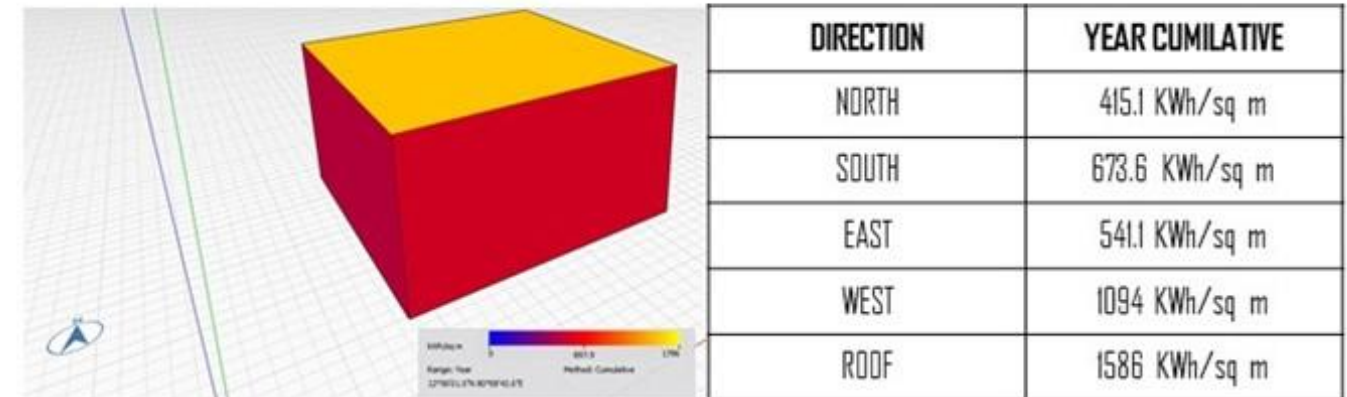
KAMBAR SITE

ANALYSIS

Location : Chennai
Building Type : Residential

CLIMATE ANALYSIS

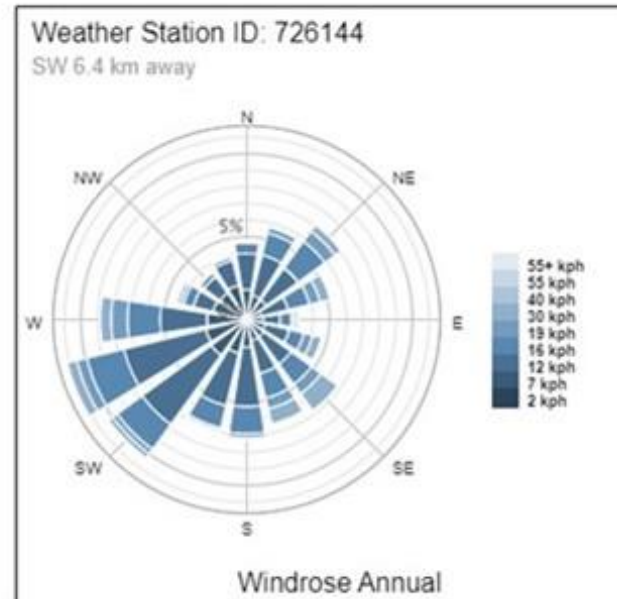
ORIENTATION



Buildings should be oriented with their **longer axis facing North - South** aligned perpendicular to the prevailing winds to facilitate maximum air-flow and cross ventilation through the building.

East , West & South - Critical facades
Roof receives max direct Radiation
Longer axis should be North - South
Most Occupied spaces should be avoided in East & West

CLIMATE ANALYSIS



WIND DIRECTION

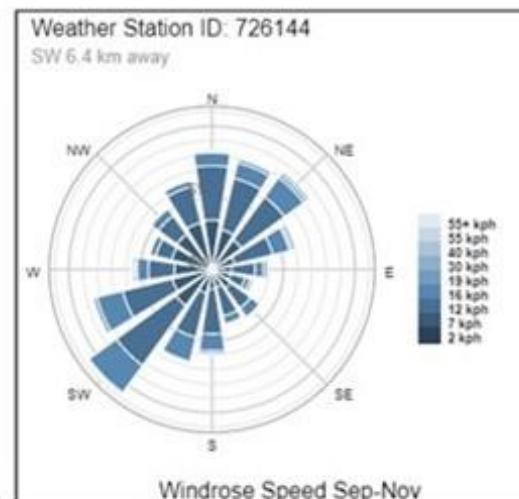
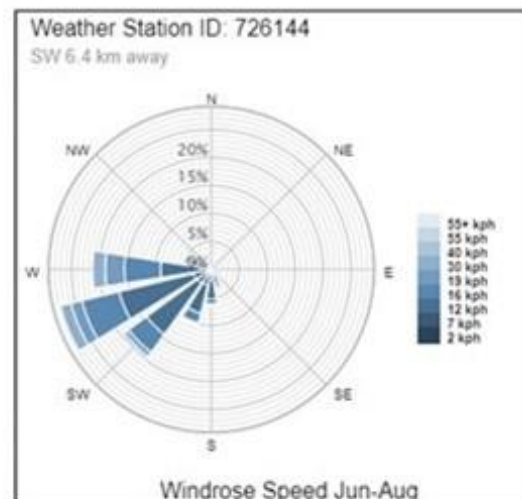
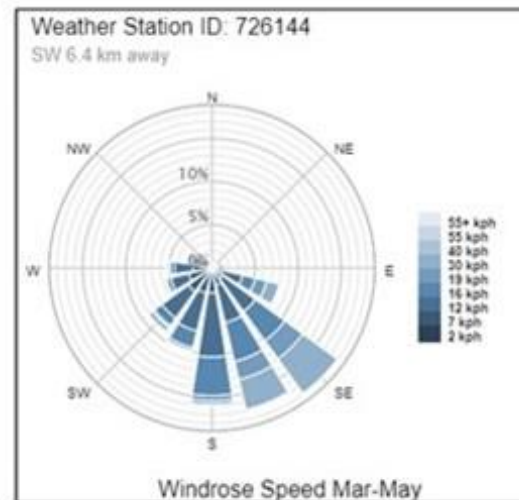
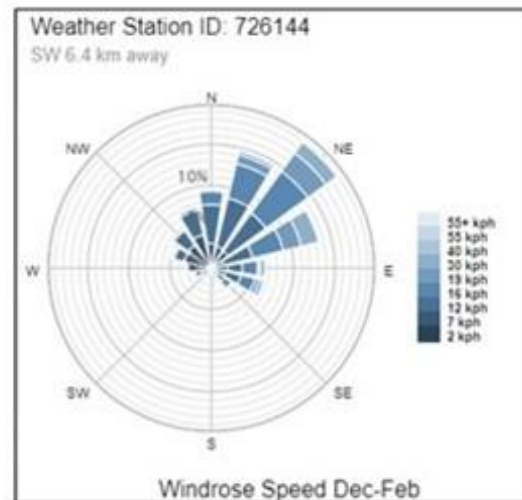
The most prevailing winds is **Southwest** between the end of May to end of September and the **Northeast** during the rest of the year.

NE - Dec - Feb

SE - Mar - May

SW - Jun - Aug

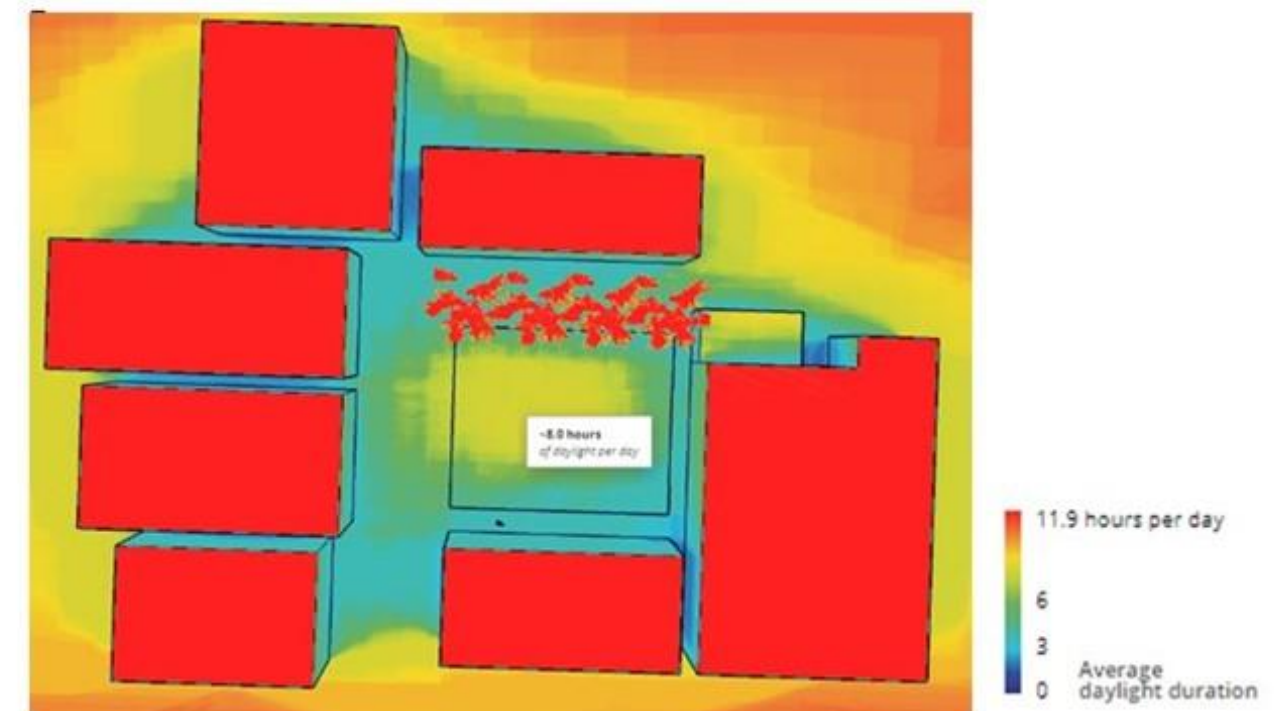
SW & NE - Sep - Nov



DESIGN RECOMMENDATION

SHADOW ANALYSIS

- Considering Surrounding buildings with G+1 height
- Site is open to West, not Shaded by surrounding buildings - Receives 8 hours of daylight
- East, South & North are partially shaded from the periphery - Receives 3.7 to 5.7 hours of daylight



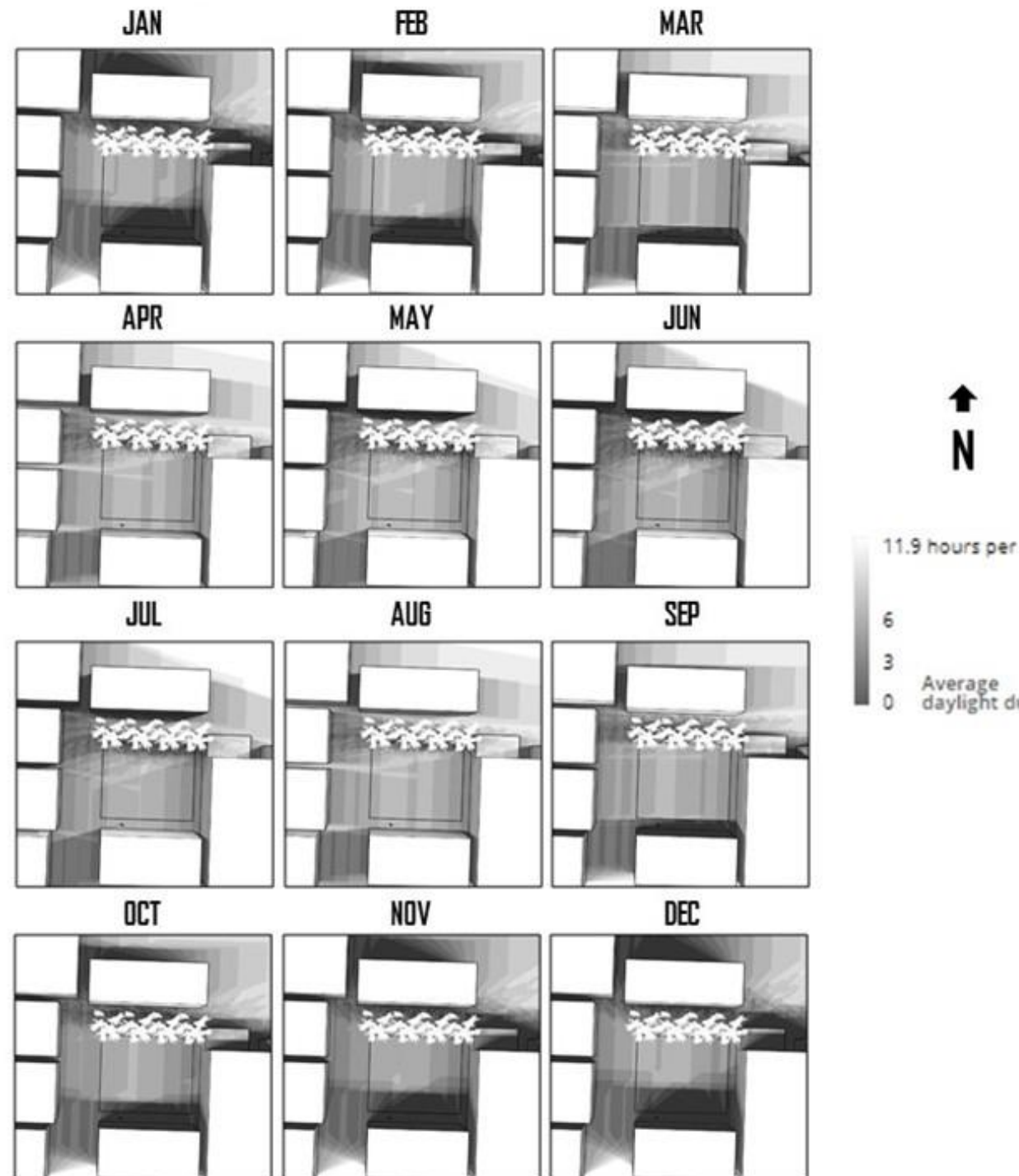
DESIGN RECOMMENDATION

NORTH – Trees in North cuts down the Natural lighting entering the site. Large opening/Cutout spaces/Courtyards are recommended

SOUTH – Shaded from October to February. Not shaded during summer

EAST – Partially Shaded

WEST – West remains unshaded by Adjacent buildings & receives harsh radiation throughout the year



DESIGN RECOMMENDATION

SOLAR ANALYSIS - ANNUAL

- West receives more direct Radiation
- Solar ingress decreases from West (1418 KWh/sq m) to East (824.6 KWh/sq m)



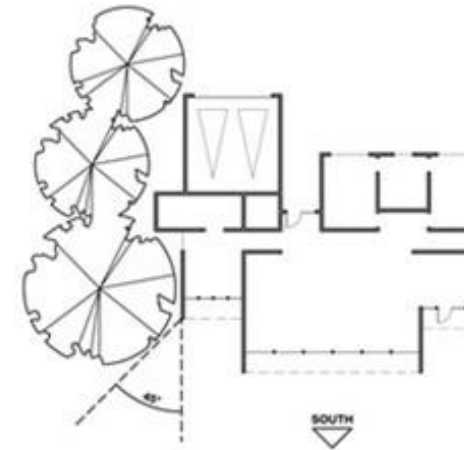
DESIGN RECOMMENDATION

SHADING DEVICE

DIRECTION	TYPE OF LOUVER RECOMMENDED
NORTH	Vertical
SOUTH	Horizontal
EAST	Vertical
WEST	Horizontal Combination of both

DESIGN RECOMMENDATION

FACADE



Use **Vegetation on West** to minimize Heat gain



Minimize Glazing in West facade to reduce Summer & fall Afternoon heat gain



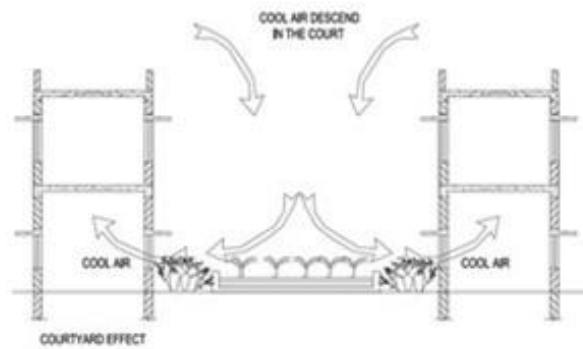
Orient most of the Window opening & **Glazing to North** shaded by Vertical fins



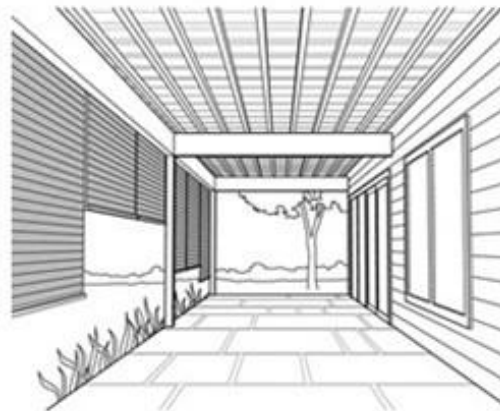
Tall operable windows with deep **Overhangs & Verandahs**

DESIGN RECOMMENDATION

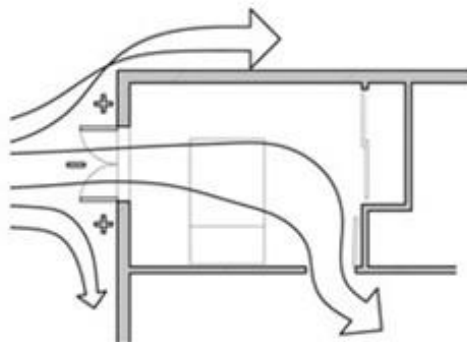
VENTILATION



Courtyard helps Cool air sinks into the court & enters the living space and Self shading



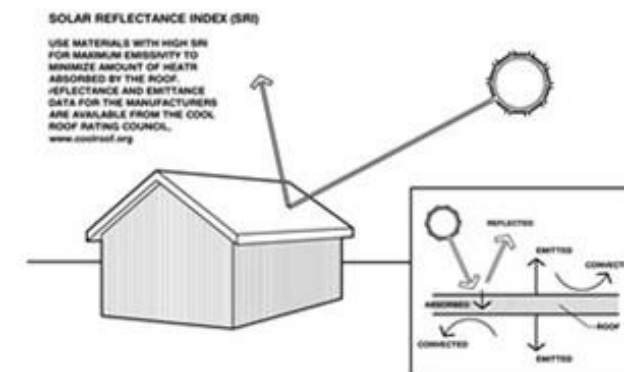
Shaded Outdoor buffer zone (Verandah) oriented to prevailing breeze



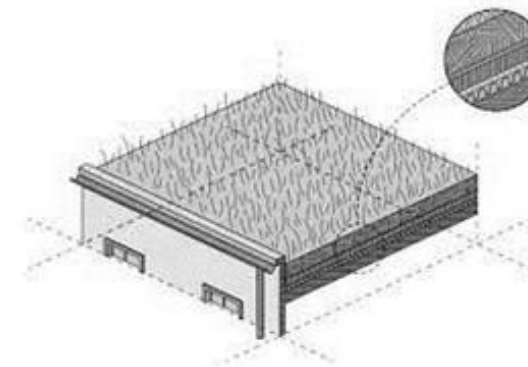
Rooms with **good cross ventilation**
Windows should be well shaded
oriented to prevailing wind

DESIGN RECOMMENDATION

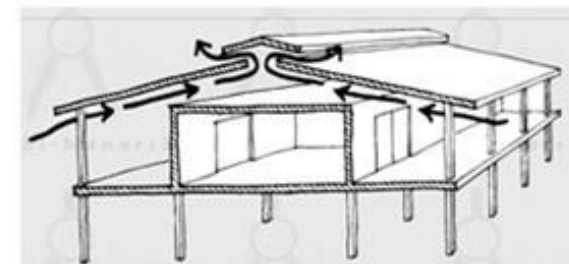
ROOF



Use Light coloured building materials & **Cool Roof** to reduce heat gain

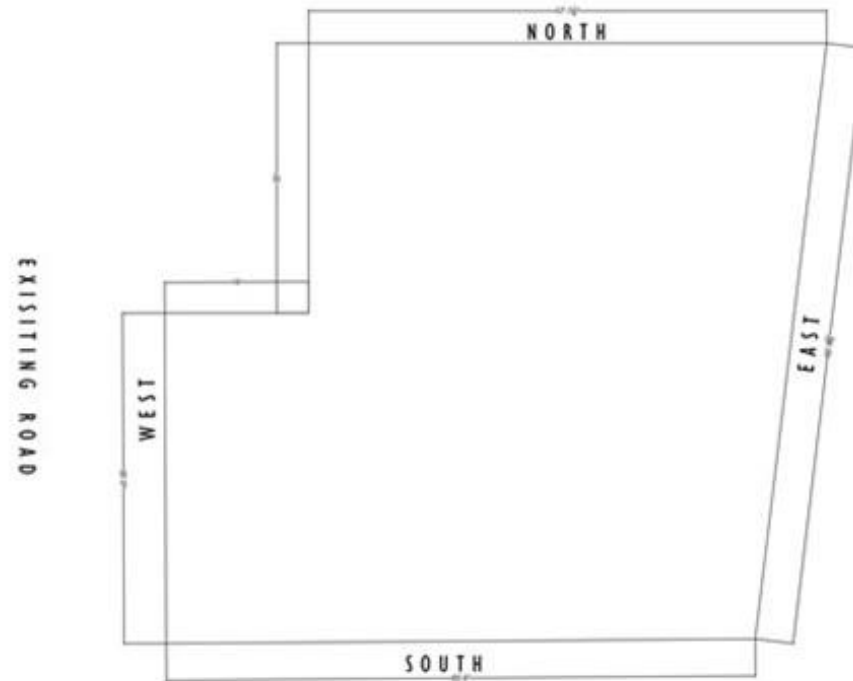


Green Roof to reduce heat gain through Roof



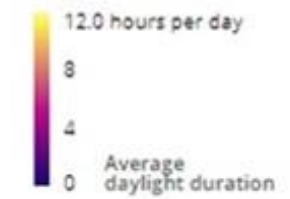
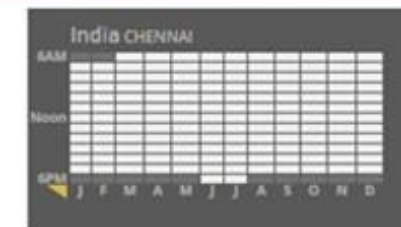
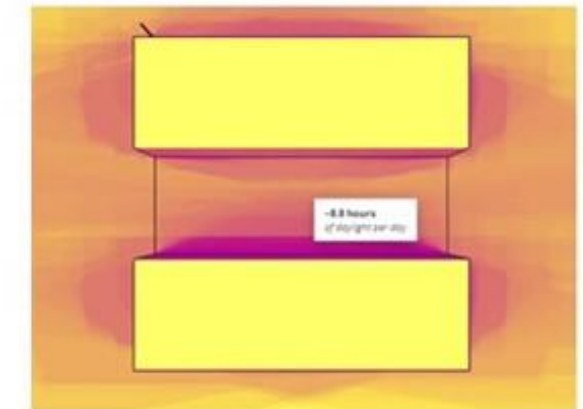
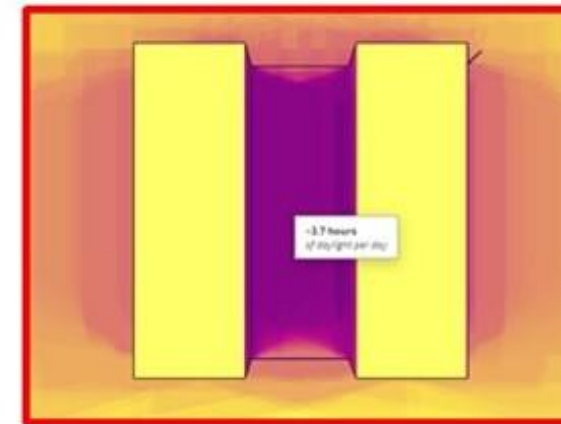
Fly roof will shade the core building & cool breeze to flow beneath

SITE

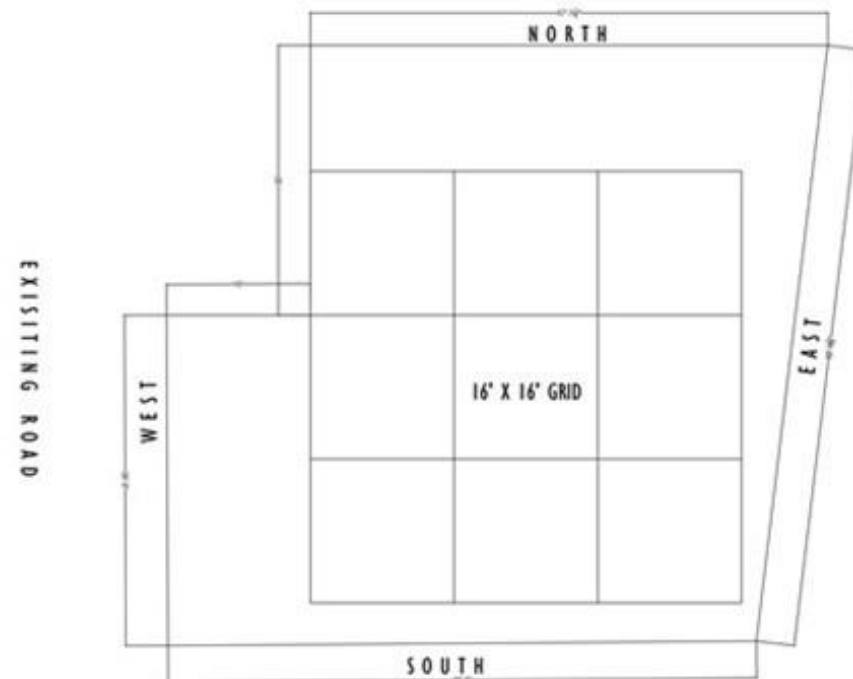


DESIGN EVOLUTION

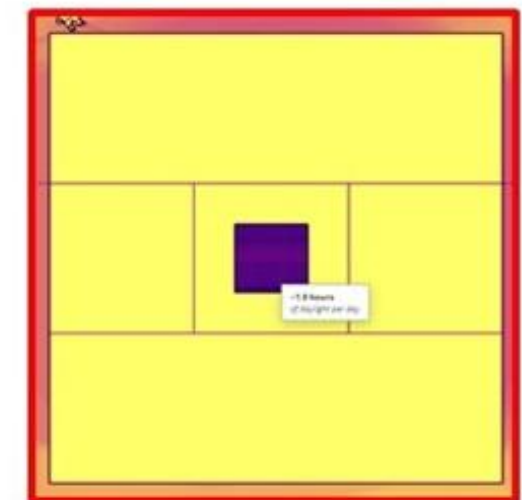
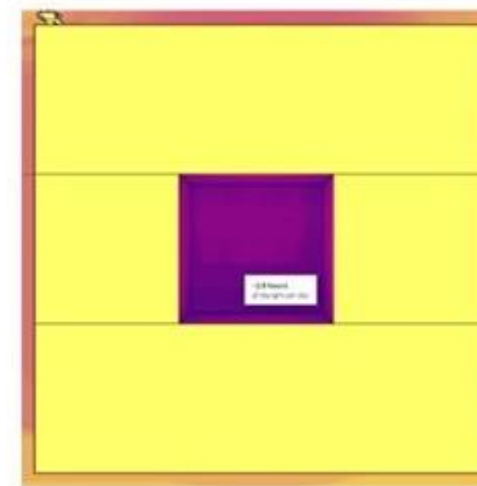
Courtyard effect works better when oriented in North South direction, shades upto 8 hrs a day

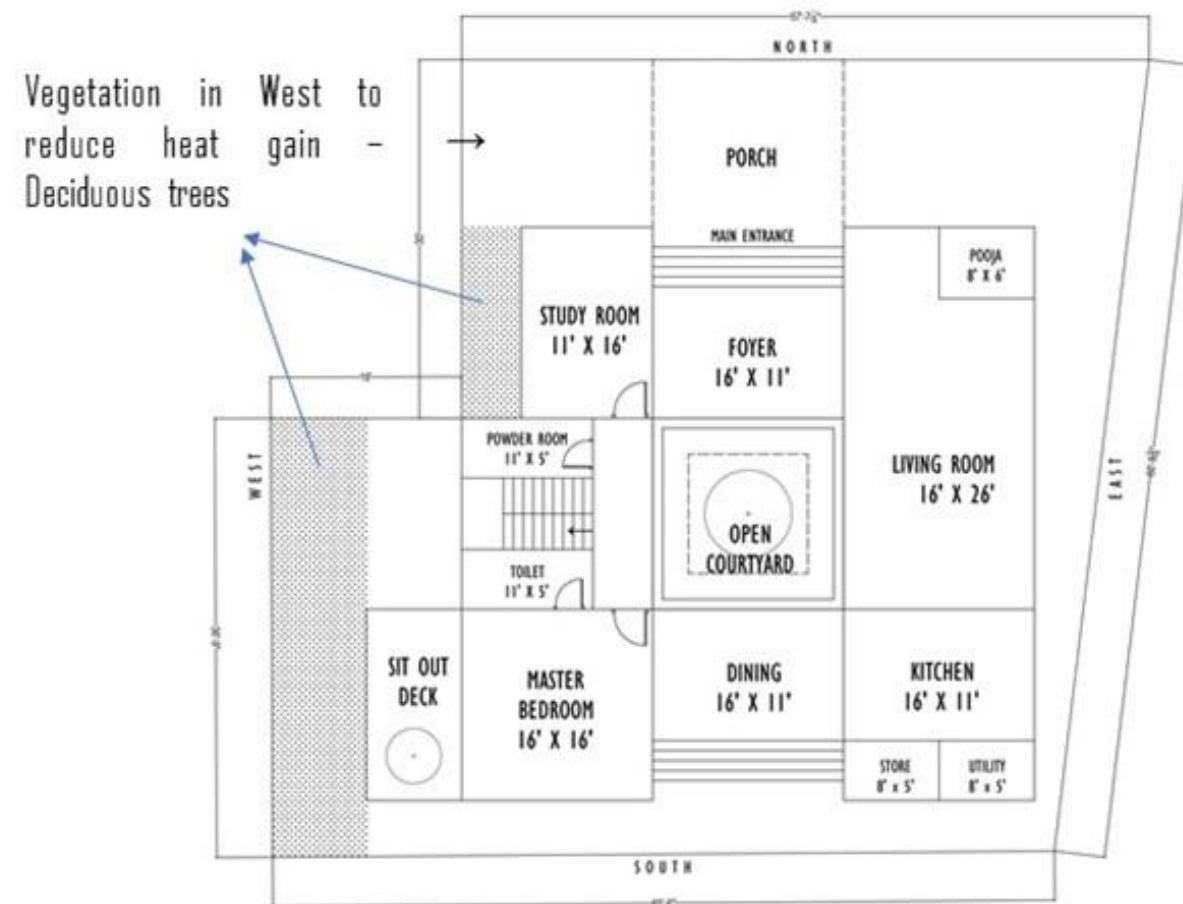


9 SQUARE GRID

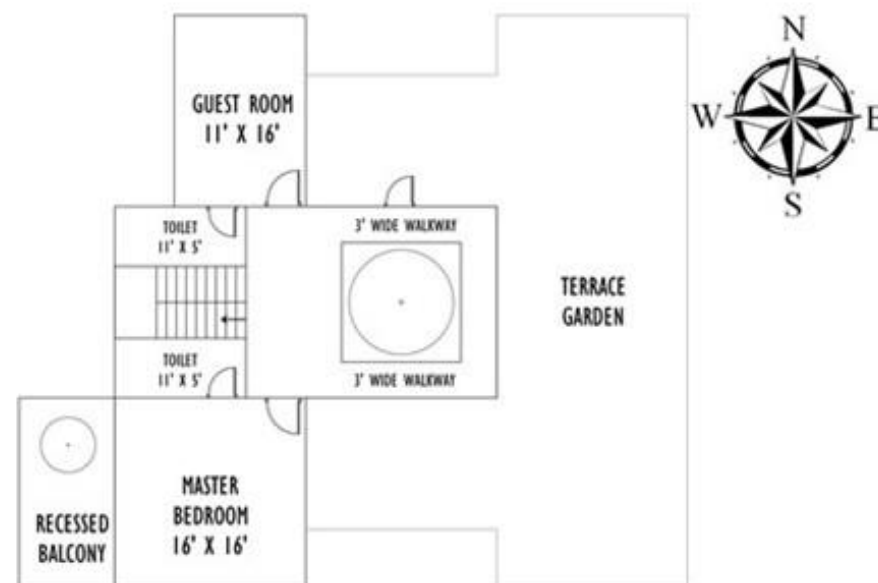


Square courtyard with extended roof will limit the direct radiation entering & promote better ventilation





GROUND FLOOR PLAN



FIRST FLOOR PLAN

THANK YOU