

PROFESSIONAL TRAINING REPORT

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

by

NANDHINE J/40890011



**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. TAMIL NADU.

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)
JAN 2022**

Name of the Student : Nandhine J

Semester : III

Reg No. : 20S895014

Batch : 2020-2022



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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 **NANDHINE J, 40890011** who had undergone training in **RANJAN DANIEL ARCHITECT** and has been monitored by the continuous assessment during **Nov 2021 to Jan 2022**.

DR.DEVYANI GANGOPADHYAY

DEAN,

School of Building and Environment

Department of Architecture

Submitted for Viva voce Examination held on 05-02-2022

Internal Examiner

External Examiner



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E-mail: archhod@sathyabama.ac.in



DECLARATION

I **NANDHINE J** hereby declare that the Professional Training Report **29th DEC 2021 - 7th JAN 2022** done by me under the guidance of **Ar.RANJAN DANIEL** is submitted in partial fulfillment of the requirements for the completion of practical training session.

DATE : 7th January, 2022

PLACE : Chennai

A handwritten signature in blue ink that reads 'Nandhine J'.

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.RANJAN DANIEL,Landscape Architect,Ranjan Daniel 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.

Also thanks to, **Ar.RANJAN DANIEL, Landscape Architect, Ranjan Daniel Architect, Kodambakkam, Chennai-600024.**

CONFIRMATION LETTER

Ranjan Daniel B.Arch. M.L.A
Architect Landscape Architect

O: +91 44 42134300

12/19 First Floor
3rd Main Road
United India Colony
Kodambakkam
Chennai – 600 024
E mail: ranjanarchitect@yahoo.co.in

Date: 05.11.2021

To

Dr. Devyani Gangopadhyay

Dean, School of Building & Environment,

Sathyabama Institute of Science and Technology,

Chennai – 600 119.

Dear Madam,

Sub: Practical Training of **Miss. NANDHINE. J** - Reg no: **40890011**

This is to inform you that I am happy to have **Miss. NANDHINE. J**
(Reg no: **40890011**) student of your institution for professional training in my office
for a minimum period of 30 working days during November 2001 and December
2021.



RANJAN DANIEL

CA No-86/10216, R.A. No-192

RANJAN DANIEL B.Arch. M.L.A.
REGISTERED ARCHITECT
CA No-86/10216, R.A.No-192,
1st FLOOR, 12 (OLD No-19) THIRD MAIN ROAD
UNITED INDIA COLONY, KODAMBAKKAM,
CHENNAI-600 024. PH: 42134300

Consolidated Certificate

(Annexure –V)

Ranjan Daniel B.Arch. M.L.A
Architect Landscape Architect

O: +91 44 42134300

12/19 First Floor
3rd Main Road
United India Colony
Kodambakkam
Chennai – 600 024
E mail: ranjanarchitect@yahoo.co.in

Date: 25.01.2022

To

Dr. Devyani Gangopadhyay

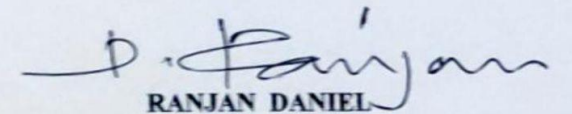
Dean, School of Building & Environment,

Sathyabama Institute of Science and Technology,

Chennai – 600 119.

Dear Madam,

This is to certify that **Miss. NANDHINE. J**, Reg. No. **40890011**, III sem, M.arch
Student of your Institution has completed her practical training period successfully at
my firm from 29.11.2021 to 07.01.2022 for a total of 30 working days.



RANJAN DANIEL

CA No-86/10216, R.A. No-192

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CA No-86/10216, R.A.No-192,
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WEEKLY REPORT

(Annexure –VII)


SATHYABAMA
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 (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 : Ranjan Daniel Landscape Architect
 : 12/19 First Floor, 3rd main road, united india colony, Kodambakkam, Chennai-24 / 044-42134300

2. Address & Contact Number

3. Name of the student : Nandhine J

4. Duration : From 29/11/21 To 4/12/21

5. Total No. of days : 6

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*	70				

(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)

RANJAN DANIEL B.Arch., M.L.A.
 REGISTERED ARCHITECT
 CA No-86/10216, R.A.No-192,
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 : 12/19 First Floor, 3rd main road, united india colony, Kodambakkam, Chennai-24 / 044-42134300

2. Address & Contact Number

3. Name of the student : Nandhine J

4. Duration : From 06/12/21 To 11/12/21

5. Total No. of days : 6

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					
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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*	70				

(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)

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WEEKLY REPORT

(Annexure –VII)



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1. Name of the office / organization : Ranjan Daniel Landscape Architect
2. Address & Contact Number : 12/19 First Floor,3rd main road,united india colony,Kodambakkam, Chennai-24 / 044-42134300
3. Name of the student : Nandhine J
4. Duration : From 13/12/21 To 18/12/21
5. Total No. of days : 5 (15/12/21 leave taken)
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*	7.0				

(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)
RANJAN DANIEL B.Arch., M.L.A.
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2. Address & Contact Number : 12/19 First Floor,3rd main road,united india colony,Kodambakkam, Chennai-24 / 044-42134300
3. Name of the student : Nandhine J
4. Duration : From 20/12/21 To 24/12/21
5. Total No. of days : 4.5
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					
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Overall Grading*	7.0				

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- Address & Contact Number : 12/19 First Floor, 3rd main road, united india colony, Kodambakkam, Chennai-24 / 044-42134300
- Name of the student : Nandhine J
- Duration : From 27/12/21 To 30/12/21
- Total No. of days : 4
- Evaluation of Performance criteria shall be on

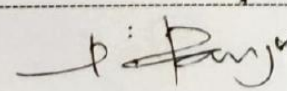
* **Note:** Kindly grade the student as per his/her overall performance in the office during the assessment month; which will be converted to the allotted 200 marks by the department.

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*	7.0				

(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
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- Name of the student : Nandhine J
- Duration : From 03/01/22 To 07/01/22
- Total No. of days : 4.5
- Evaluation of Performance criteria shall be on

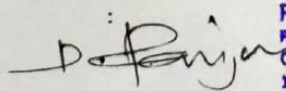
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Participation and contribution in project meetings					-
Understanding of codes and standards		✓			
Schedule preparation & tracking activities					-
Preparation / Management of drawings		✓			
Learning / Application of software in Projects		✓			
Preparation of concept for projects		✓			
Site Management / Discussion with clients					-
Overall Grading*	7.0				

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

7. Any other Remarks : _____

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WORK DIARY

Date	Project Name	Work Done
29th Nov	Varadharajapuram Villas	Landscape,Horticulture Study
30th Nov - 3rd Dec	Resort at Yelagiri	Daylight analysis,Sections
4th - 6th Dec	Mixed Housing Development at CMC	RainWater Harvesting Study
7th - 9th Dec	Thalambur Villas	Samhitha ECBC Compliance
10th - 15th Dec	Thalambur Villas	Formit Analysis
16th - 19th Dec	Perungudi Villas	Flow design - Wind Analysis
20th - 26th Dec	OSR at Kalavakkam	Landscape Design
27th Dec - 3rd Jan	Office Interiors	Furniture Design
4th - 7th Jan	Mayflower Enclave	Entrance Design

Chief Architect Signature:

Office seal:

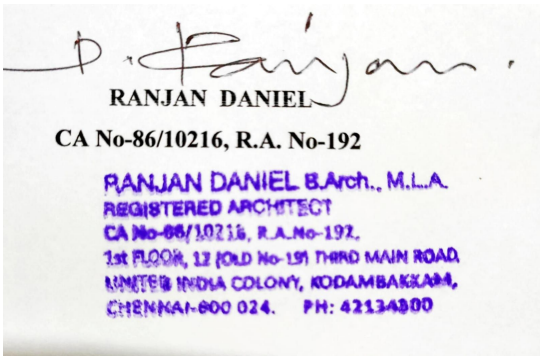
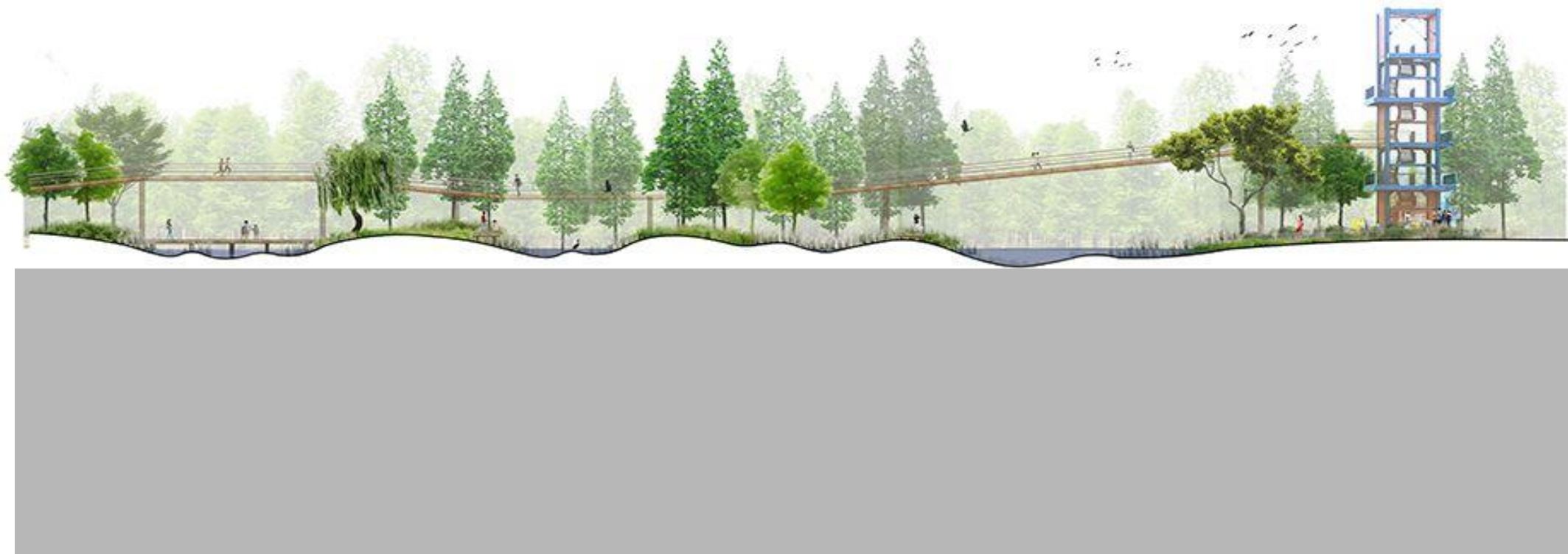


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ABOUT THE FIRM

Ranjan Daniel Architectural firm is a firm with expertise in architectural works along with the landscaping projects. They take up works pertaining to residential, commercial and/or industrial projects that redefine a particular area's architectural landscape at large. The firm has a team of skilled and competent architects, interior designers, civil engineers, urban/town planners, landscape artists, CAD operators, interior decorators and 3D and graphic designers. The chief architect designs the projects according to the clients criteria and also incorporates as much as landscaping, stormwater management, sustainable roofing designs, low cost housing designs etc. I would like to thank all the senior and the junior architects who have given me an experience to work in landscape projects and on various ongoing projects in the firm. In this internship experience I have learned about new materials, plants, planning strategies, Roofing strategies etc.



SUSTAINABLE DESIGNS

TYPOLOGY: Residential Landscape design

CLIENT: Casa Grand

LOCATION: Varatharajapuram

STATUS: Completed

BUILT UP AREA: 12725 Sqft



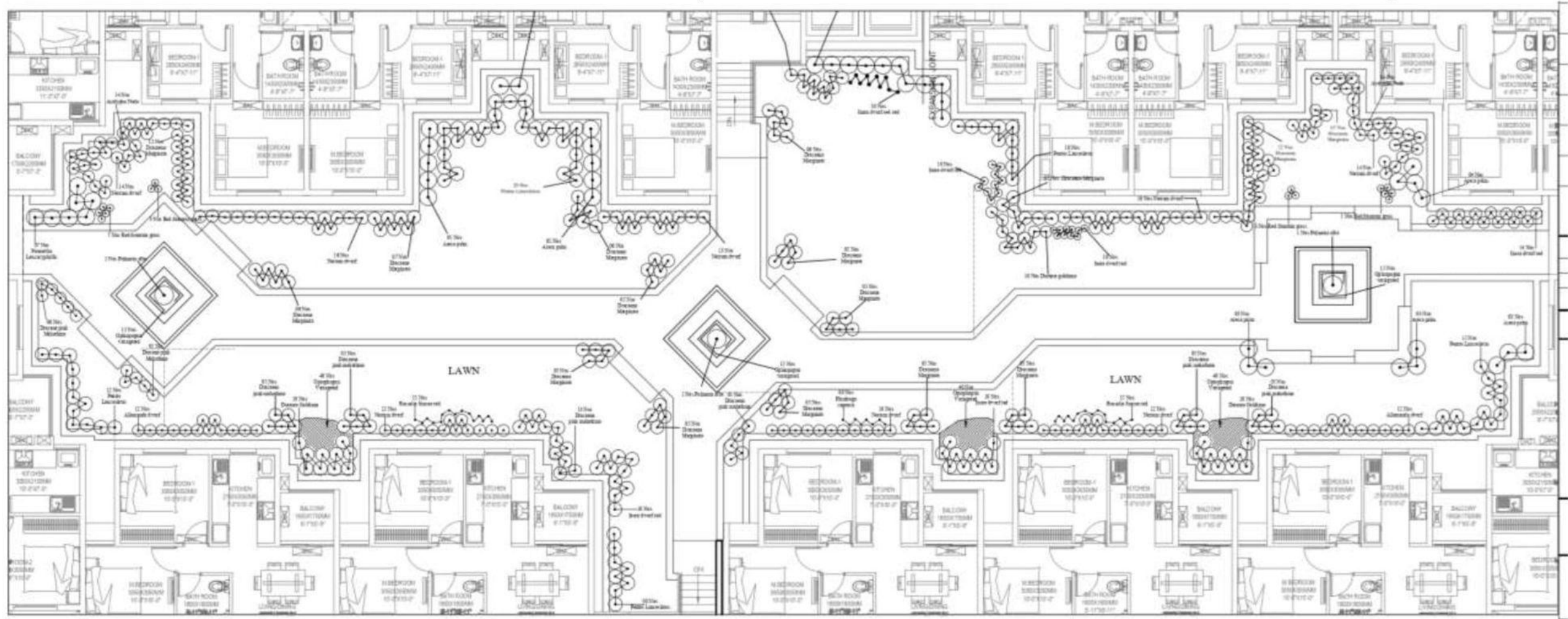
Areca palm



Allamanda dwarf



Red fountain grass



- The project focus on sustainable landscaping for villas at varatharajapuram the selection of plants are done based on various parameters like growth rate, height, crown cover etc.
- The project has different shrubs and trees and these are placed based on the crown cover and sunlight needed.
- The design is done pertaining to the placement of the plants by placing Pulmeria alba(tree) in the centre and the shrubs like Areca palm , Ixora dwarf red , Red fountain grass etc on the walkways.

Varatharajapuram villas Landscape design

TYOLOGY	PLANTS	SPREAD	HEIGHT
TREES			
1	Plumeria Alba	0.45m	0.90m
SHRUBS			
1	Acalypha nuda	0.15m	0.30m
2	Allamanda dwarf green	0.30m	0.6m
3	Areca Palm	0.90m	1.20m
4	Dracena marginata	0.30m	0.45m
5	Dracena pink mahatma	0.30m	0.45m
6	Durantina goldiana	0.15m	0.30m
7	Ixora dwarf red	0.15m	0.30m
8	Nerium dwarf	0.15m	0.30m
9	Ophiopogen variegated	0.15m	0.15m
10	Pentas lanceslatus	0.15m	0.30m
11	Plumbago capensis	0.15m	0.15m
12	Poinsettia leucocyphala	0.15m	0.30m
13	Red fountain grass	0.30m	0.30m
14	Russelia juncea red	0.15m	0.15m



Duranta Goldiana



Dracaena Marginata



Pentas Lanceslatus



Dracena pink Mahathma



Poinsettia Leucocyphala



Pentas Lanceslatus



Russelia Juncea red



Nerium dwarf



Ophiopogon variagated



Plumbago capensis



Ixora dwarf red



Acalypha Nuda

TYPOLOGY: Commercial Resort design

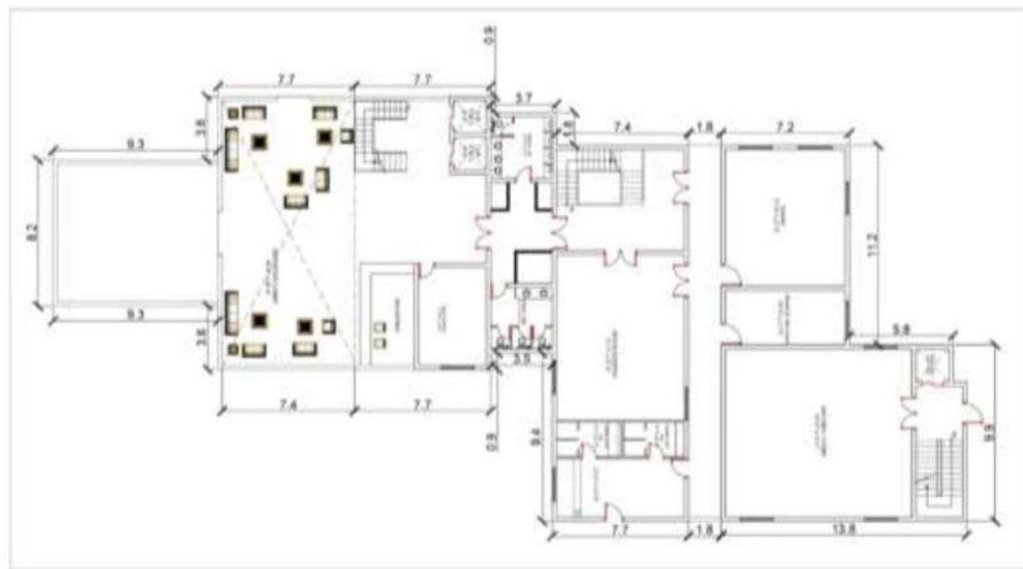
CLIENT:

LOCATION: Yelagiri

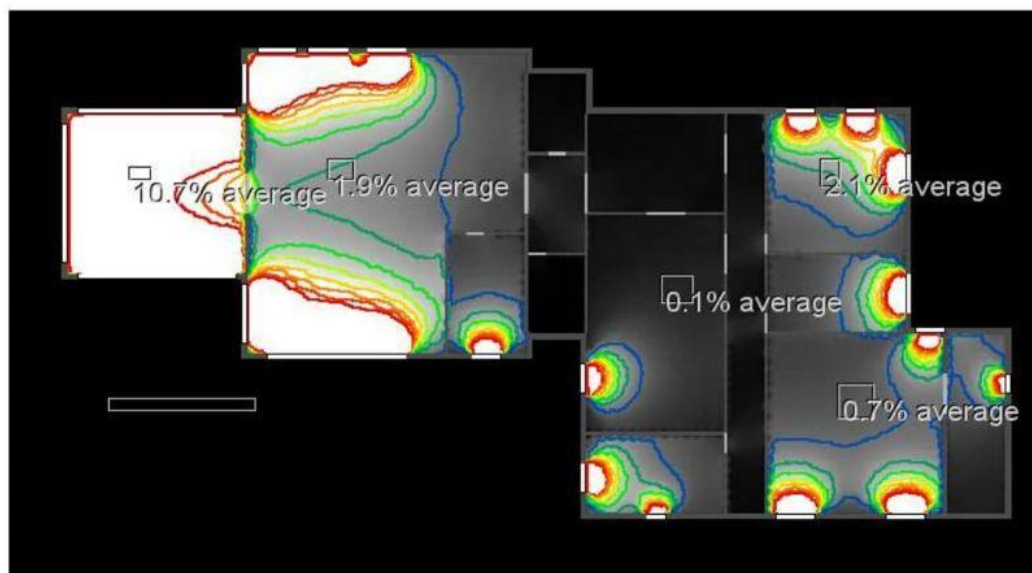
STATUS: On Going

BUILT UP AREA: 67142 Sqft

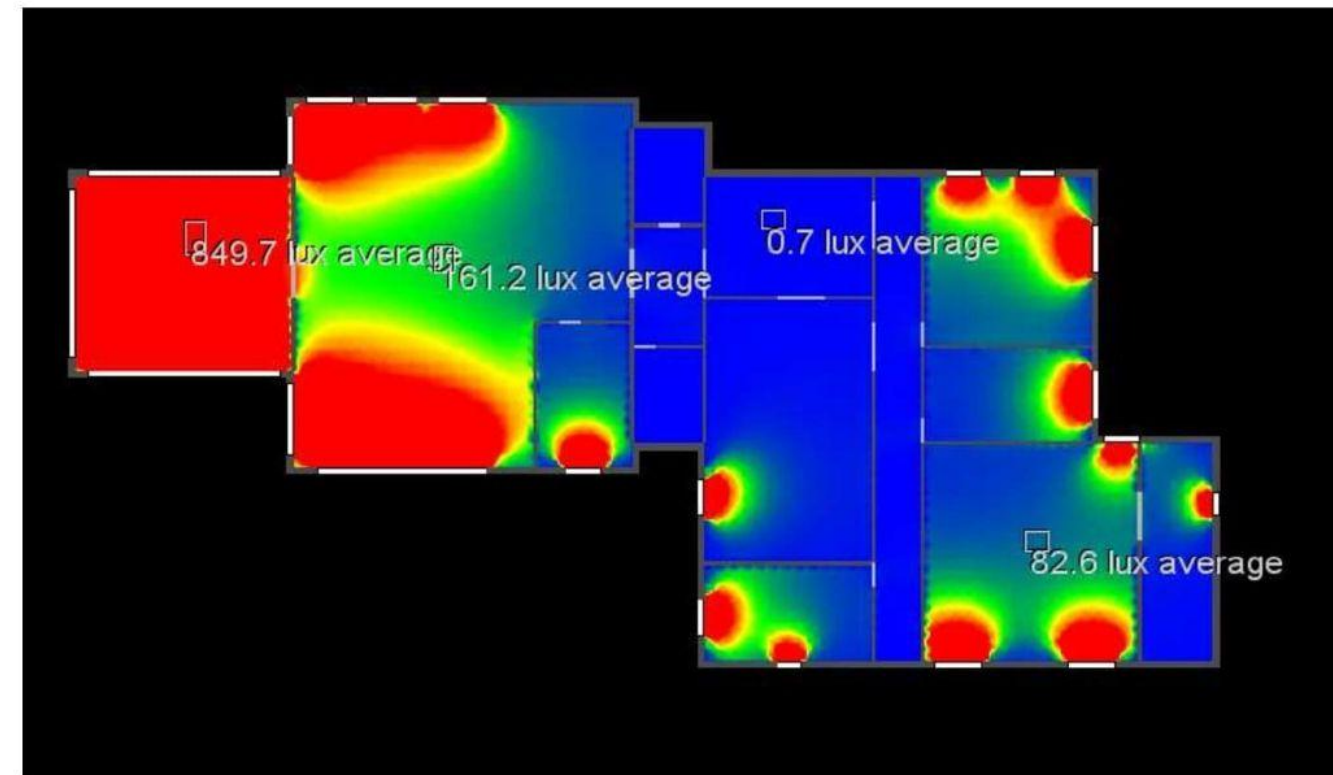
- The project focus on designing of resort at yelagiri the site is located on hill and the landscaping is also done.
- The projects daylight analysis shows that the Illuminance levels are higher than the standard levels as per SP41.
- The design has 849lux at reception which is higher than the standard 300lux which causes unnecessary glare and corridors have very low lux levels than standards.



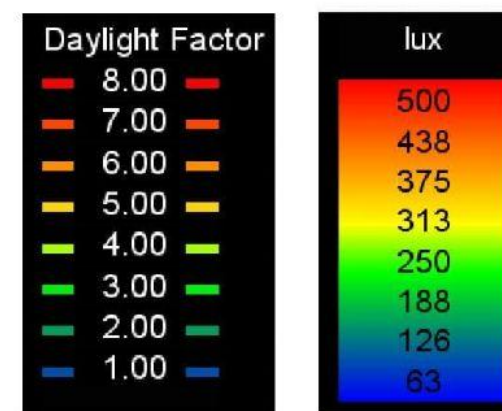
Administration Block floor plan



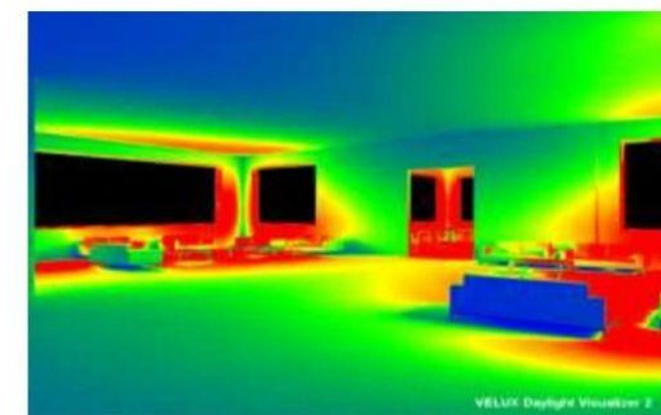
Daylight Factor analysis



Illumination Analysis



Legend



Lux levels in view

Commercial Resort design

B. Hotels, Restaurants, shops and Homes

NOTE — The lighting of some of these locations will be determined primarily by aesthetic considerations and the illumination recommendations should be taken as a guide only. For the same reason, glare indices are given for working areas only.

Hotels

Entrance halls	150
Reception and accounts	300
Dining rooms (tables)	100
Lounges	150

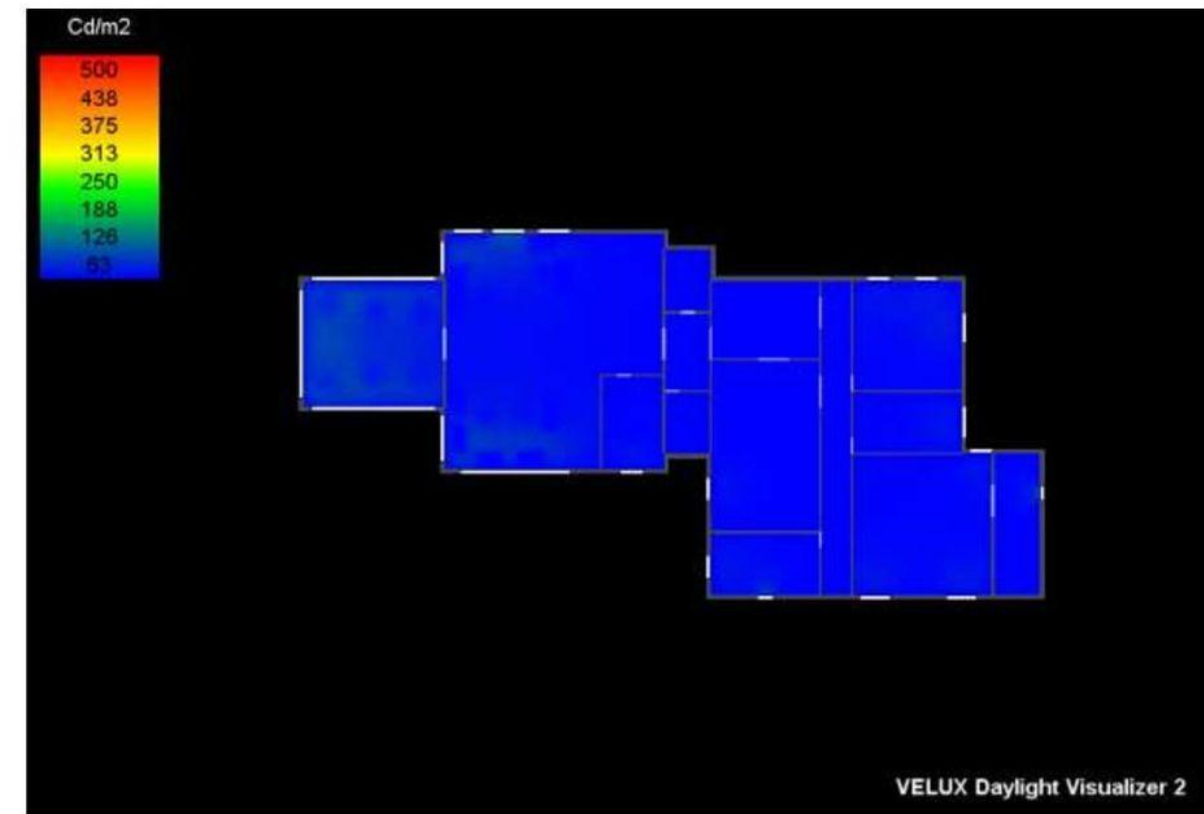
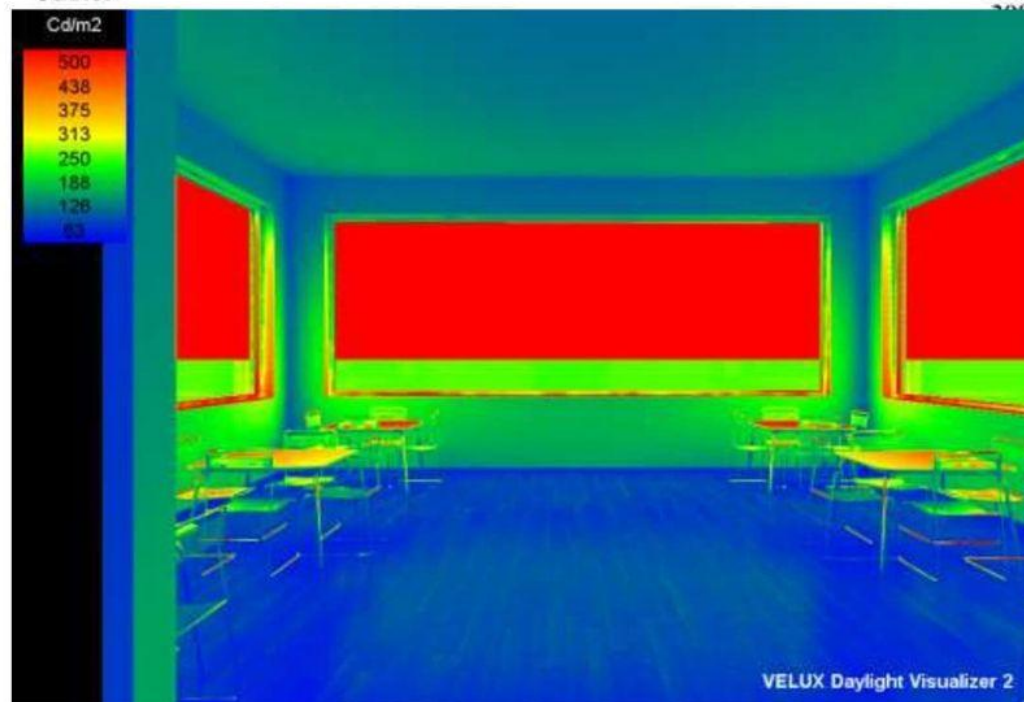
Bedrooms:

General	100
Dressing tables, bed heads, etc.	200
Writing rooms (tables)	300
Corridors	70
Stairs	100
Laundries	200
Kitchens	200+
Goods and passenger lifts	70
Cloakrooms and toilets	100+
Bathrooms	100+

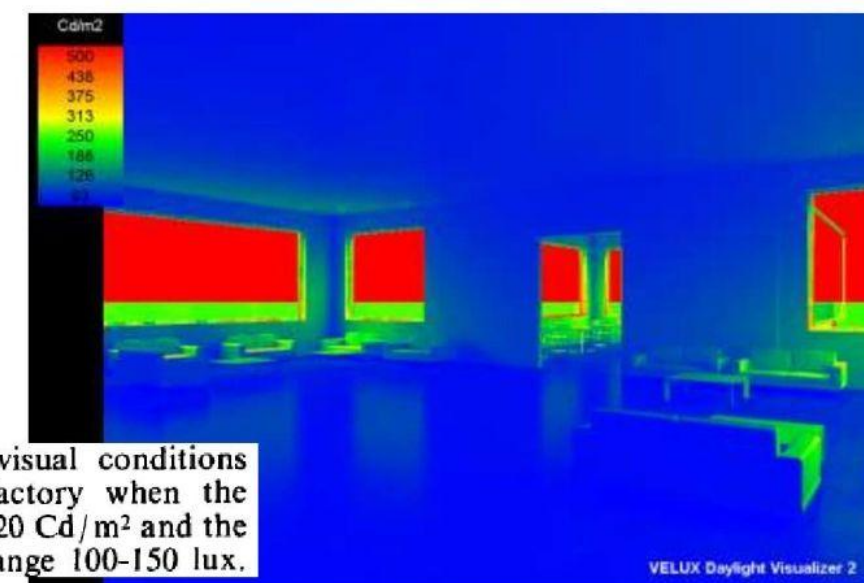
Restaurants

Dining rooms:

Tables



drops below 20 Cd/m². The visual conditions have been found to be satisfactory when the surround luminance is raised to 20 Cd/m² and the workplane illuminance to the range 100-150 lux.



TYPOLOGY: Residential Villa design

CLIENT: Casa Grand

LOCATION: Thalambur

STATUS: Completed

BUILT UP AREA: 424710Sqft

- The project focus on designing residential villas in thalambur.
- The samhitha calculations were done for the residential design and the villa complies the ECBC requirements in samhitha calculations.
- The design has properly designed shading devices on the north and south facades.
- The villas facing the east receives excess thermal radiation during the critical months.

Samhitha Calculations ECBC

ECBC SAMHITA - CODE COMPLIANCE							
Details of exposed doors, windows and ventilators							
Opening	Opening width (W)	Opening height (H)	Opening area(m2)	Width of glass in Opening (M)	Height of glass in Opening (H)	Glass area in Opening (m2)	Opaque area (m2)
W1	2.5	2.1	5.25	2.4	2	4.8	1.45
W2	2.76	2.1	5.79	2.66	2	5.32	0.47
W3	1.26	2.1	2.64	1.16	2	2.32	0.32
W4	2.6	2.1	5.46	2.5	2	5	0.46
W5	2.09	1.97	4.11	1.99	0.91	3.8	0.31
V	0.6	0.45	0.24	0.6	0.4	0.24	0
D1	1.15	2.2	2.53	0	0	0	2.53
Details of construction materials							
Wall	230 mm brick wall (U-value – 0.41w/m2.k)						
Roof	150mm rcc roof (U-value – 3.5w/m2.k)						
Glass in Windows	Roughcast textured glass (U-value – 1.22w/m2.k)						
Wood in door	Wood frame (U-value - 0.64)						
Envelope areas of the building							
Orientation	Total wall length (M), Exposed to ambient	Total wall height (M), Exposed to ambient	Envelope area (m2)				
North	8.8	9.3	81.8				
South	8.8	9.3	81.8				
East	10	9.3	93				
West	14	9.3	130.2				
Envelope area (m2),excluding roof			386.8				
Envelope area for all flats			18953.2				

Residential Villa design

STEP 1 - Openable window-to-floor area ratio (WFRop)

Openable area calculation

Opening name	Opening area (m2)	Openable area(m2)	Remarks
W1	10.5	9.45	90% openable
W2	11.58	10.4	
W3	2.64	2.37	
W4	5.46	4.9	
W5	8.22	7.39	
V	0.72	6.83	
D1	7.59	0.64	
Openable area for each flat		42.639	
Openable area for 16 flats (Aopenable)		2089.311	

Calculation of total carpet area(Acarpet)

$$A_{\text{carpet}} = 49 \times 74 = 3626 \text{ m}^2$$

Calculate the openable Window-to-Floor Ratio (WFRop)

$$\text{WFRop} = 2089.311/3626 = 57.6\%$$

As per Table 1, The minimum WFRop for warm humid climate is 16.66%. Thus this project complies with this requirement.

STEP 2 - Visible Light Transmittance (VLT)

Calculation of Window-to-Wall ratio

Orientation	Opening name	Opening area (m2)	Non-Opaque (glass) area in opening (m2)	No. of Openings	Total opening area (m2)	Total Non-Opaque (glass) area (m2)
South	W1	5.25	4.8	98	514.5	470.4
South	W3	2.64	2.32	49	129.3	113.6
South	W4	5.46	5	49	267.5	245
South	W5	4.11	3.8	98	402.7	372.4
North	W2	5.79	5.32	98	567.4	521.3
North	D1	2.53	0	147	371.9	0
North	V	0.24	0.24	147	35.2	35.28
Total					2288.5	1757.98

$$\text{WWR} = 1757.98/18953.2 = 0.092$$

As per Table 2, for WWR of 0.092 (range 0-0.30), the minimum required VLT is 27%. The glass used in this project has a VLT of 64%. Thus it complies with the recommended value.

STEP 3 - Thermal Transmittance of roof (Uroof)

Roof construction details

Material layer	Thickness, t (m)	Thermal conductivity, k (W/m.k)	Thermal resistance of material, R=t/k (m2.K/W)
Concrete	0.3	1.58	0.095
RCC slab	0.015	0.17	7.789
Waterproofing	0.02	0.72	0.028
Screed	0.35	0.87	0.005
PCC	0.007	1.5	0.005

Exterior floor finish

Sum of all material thermal resistance **0.075**

Total thermal resistance

$$R_t = 7.922 \text{ m}^2 \text{ k/w}$$

Total transmittance of roof

Residential Villa design

$$U_{\text{roof}} = 1/7.922 = 0.126 \text{ W/m}^2\text{.K}$$

This is lesser than the maximum U_{roof} value $1.2 \text{ W/m}^2\text{.K}$. It complies with this requirement.

STEP 4 - RETV of the building envelope (except roof)

Calculation of envelope area for each orientation

Orientation		Area (m ²)	U value (W/m ² .K)
North	Non-opaque (glass) area	11.12	1.22
	Opaque area 1 (Brick wall)	65.078	0.41
	Opaque area 2 (wood area)	6.152	0.64
East	Opaque area 1 (Brick wall)	93	0.41
	Non-opaque (glass) area	22.2	1.22
South	Opaque area 1 (Brick wall)	47.789	0.41
	Opaque area 3 (Wood area)	2.53	0.64
	Opaque area 1 (Brick wall)	130.2	0.41

Total Envelope Area, A_{envelope} = 386.8

Calculation of equivalent SHGC of non-opaque openings for each orientation

Orientation	Name	Width of glass (m)	Height of glass (m)	No. of Windows	Glass area (m ²)	H overhang (m)	V overhang (m)
North	W2-1	2.66	2	49	5.32	0.6	0
North	W2-2	2.66	2	49	5.32	0.6	0
South	W1-1	2.4	2	49	4.8	0.6	0.7
South	W1-2	2.4	2	49	4.8	0.6	0.7
South	W3	1.16	2	49	2.32	0.6	0
South	W4	2.5	2	49	5	0.6	0.7
South	W5-1	1.99	1.91	49	3.8	0.6	0.7
South	W5-2	1.99	1.91	49	3.8	0.6	0.7

PF overhang	H right	V right	PF right	H left (m)	V left (m)	PF left	ESF overhang	ESF right	ESF left	ESF total	SHGC eq
0	0	0	0	0	0	0	1	1	1	1	0.8
0	0	0	0	0	0	0	1	1	1	1	0.8
0.85	0	0	0	0	0	0	0.628	1	1	0.628	0.4
0.85	0	0	0	0	0	0	0.628	1	1	0.628	0.4
0	0	0	0	0	0	0	1	1	1	1	0.8
0.85	0	0	0	0	0	0	0.628	1	1	0.628	0.4
0.85	0	0	0	0	0	0	0.628	1	1	0.628	0.4
0.85	0	0	0	0	0	0	0.628	1	1	0.628	0.4

Residential Villa design

Calculation of 3 terms of RETV formula

Calculation for Term-1

Orientation	Component	a) Area (m2)	b) U value (W/m2. k)	c) Orientation factor, w	(a)*(b)*(c)
East	Opaque area 1(Brick wall)	93	0.41	1.155	44.04
North	Opaque area 1(Brick wall)	65.078	0.41	0.659	17.583
	Opaque area 3(Wood area)	6.152	0.64	0.659	2.594
South	Opaque area 1(Brick wall)	57.789	0.41	0.966	22.65
	Opaque area 3(Wood area)	2.53	0.64	0.966	1.564
West	Opaque area 1(Brick wall)	130.2	0.41	1.156	61.709
Total Term - 1					150.14

Calculation for Term - 2

Orientation	Component	a) Area (m2)	b) U value (W/m2. k)	c) Orientation factor, w	(a)*(b)*(c)
North	Non-opaque (glass) area	11.12	1.22	0.659	8.94
South	Non-opaque (glass) area	22.2	1.22	0.966	26.16
Total Term - 2					35.1

Calculation for Term - 3

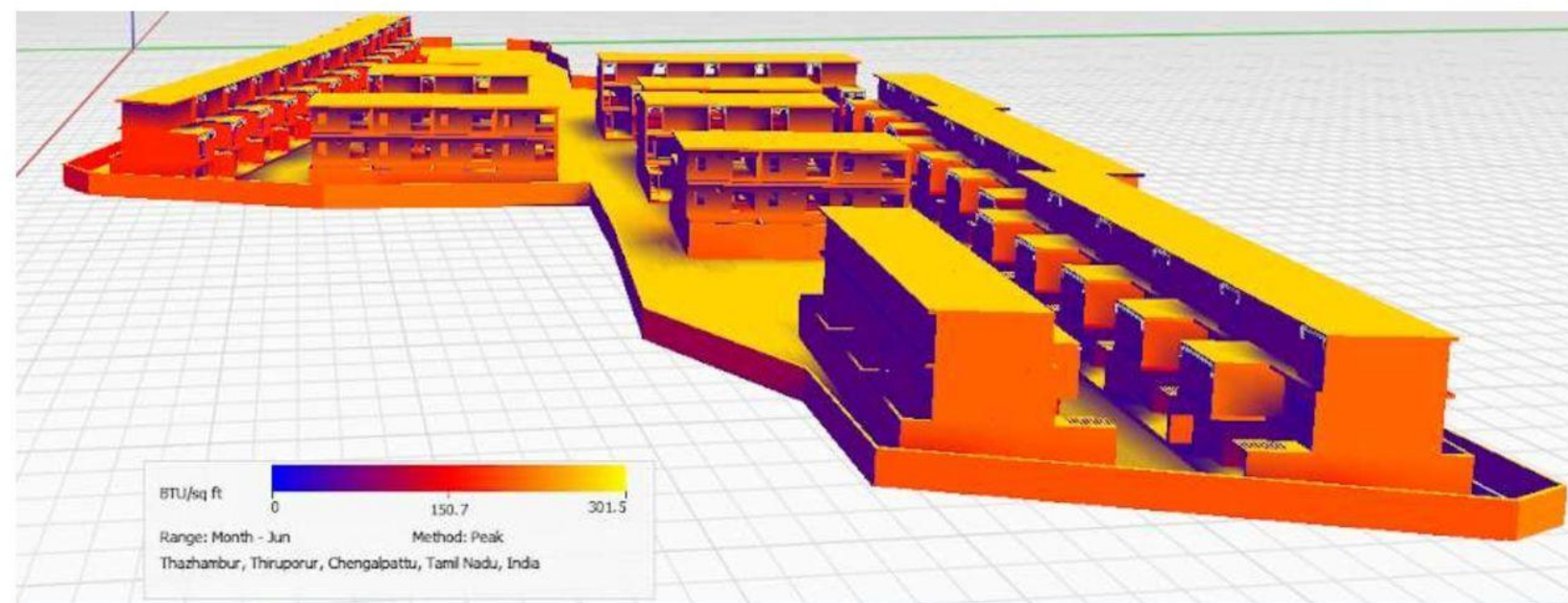
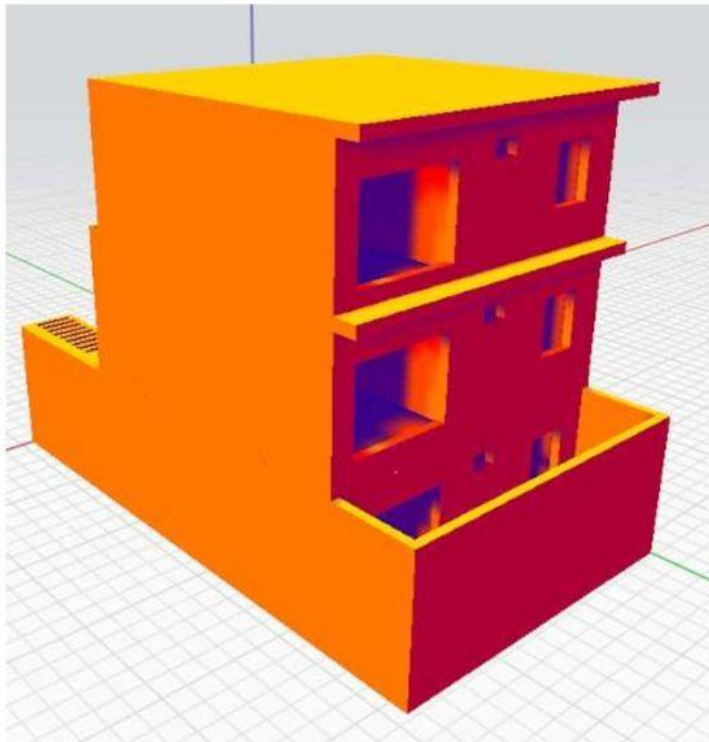
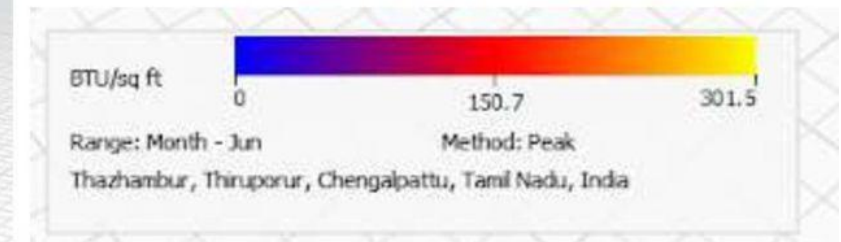
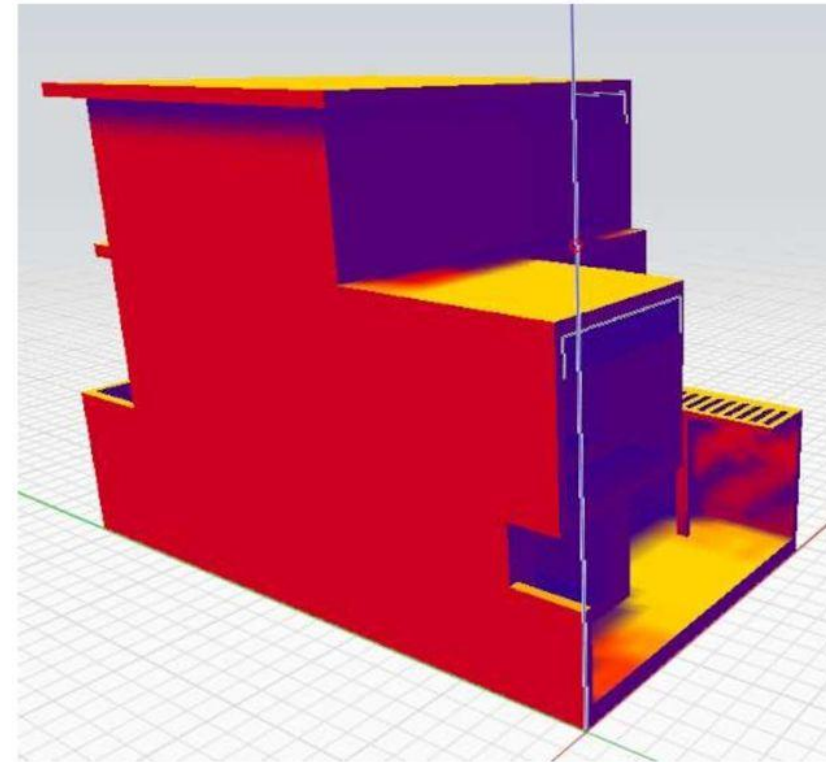
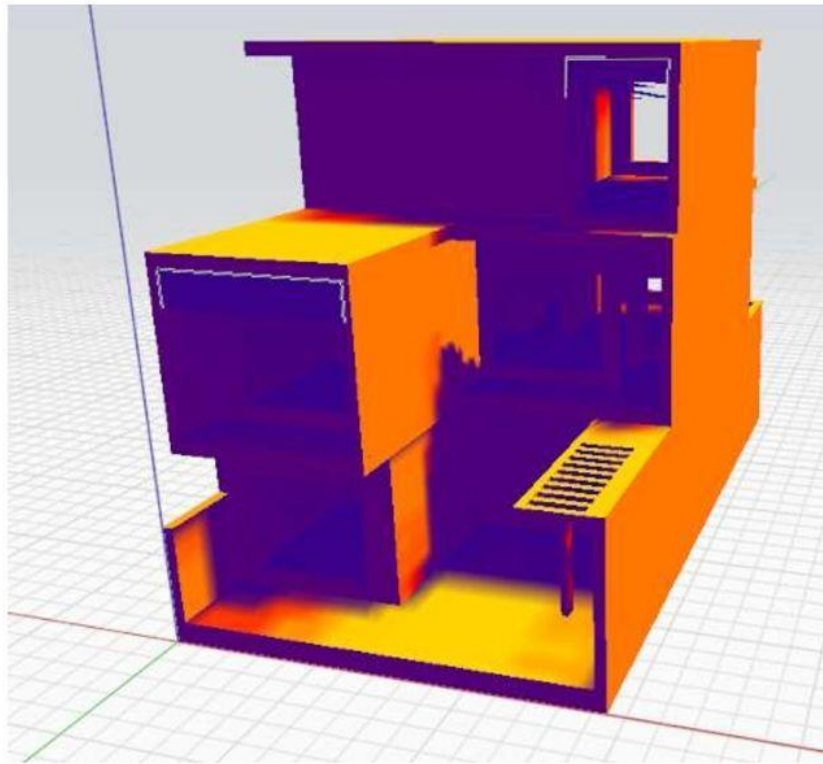
Orientation	Component	a) Area (m2)	b) Equivalent SHGC	c) Orientation factor, w	(a)*(b)*(c)
North	W2-1	5.32	0.8	0.659	2.8
North	W2-2	5.32	0.8	0.659	2.8
South	W1-1	4.8	0.4	0.966	1.85
South	W1-2	4.8	0.4	0.966	1.85
South	W3	2.32	0.8	0.966	1.79
South	W4	5	0.4	0.966	1.93
South	W5-1	3.8	0.4	0.966	1.46
South	W5-2	3.8	0.4	0.966	1.46
Total Term - 3					15.94

Calculation of RETV formula:

$$RETV = 1/386.8 * [773.221 + 45.98 + 1039.44] = 4.646 \text{ w/m}^2$$

This is lesser than the maximum RETV 15w/m2. Hence it complies this requirement.

Residential Villa design



- The formit analysis shows the thermal radiation is highest on the east façade.
- The north and south facing facades have been designed with proper shading devices both vertically and horizontally so the btu values are less.

ARCHITECTURAL DESIGNS

TYPOLOGY: Commercial Resort design

CLIENT:

LOCATION: Yelagiri

STATUS: On Going

BUILT UP AREA: 67142 Sqft

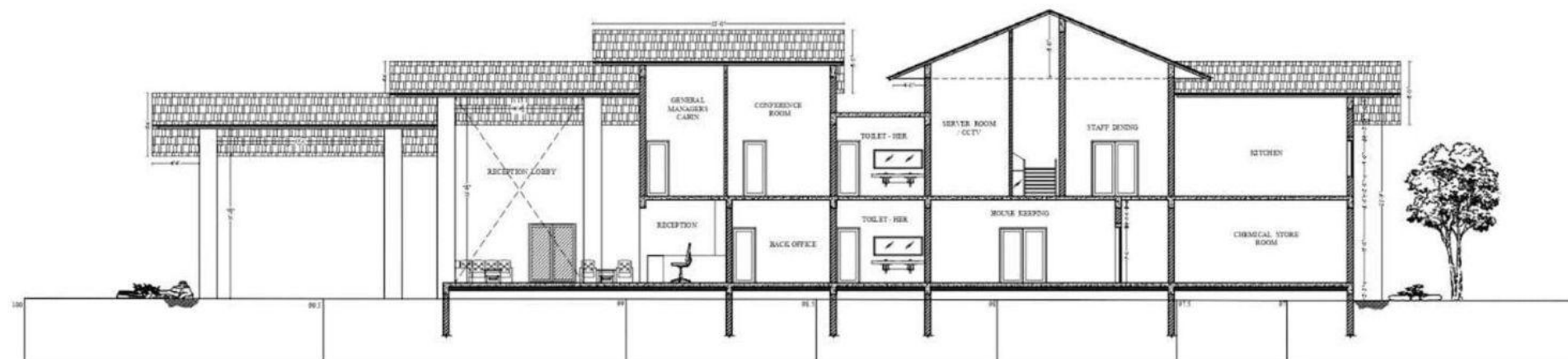
- The project focus on designing a resort at yelagiri along with the landscaping of the site.
- The working plan and sections are done by incorporating different type of pitched roofing.
- The zoning for the site is done in such a way the villas overlook the greenery and the mountain.



GROUND FLOOR PLAN



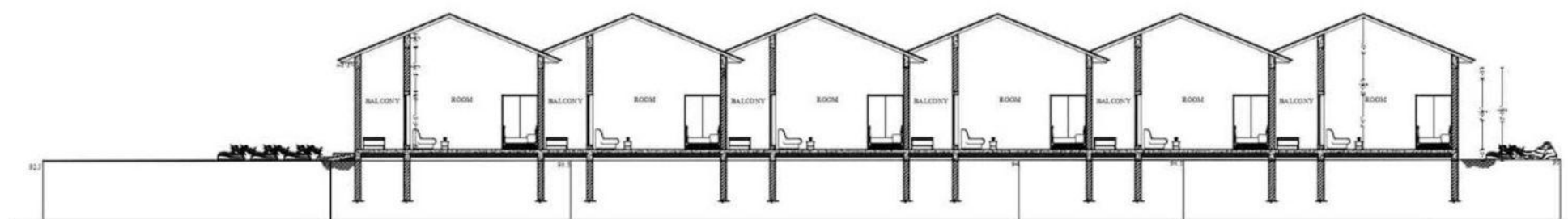
FIRST FLOOR PLAN



SECTION BB

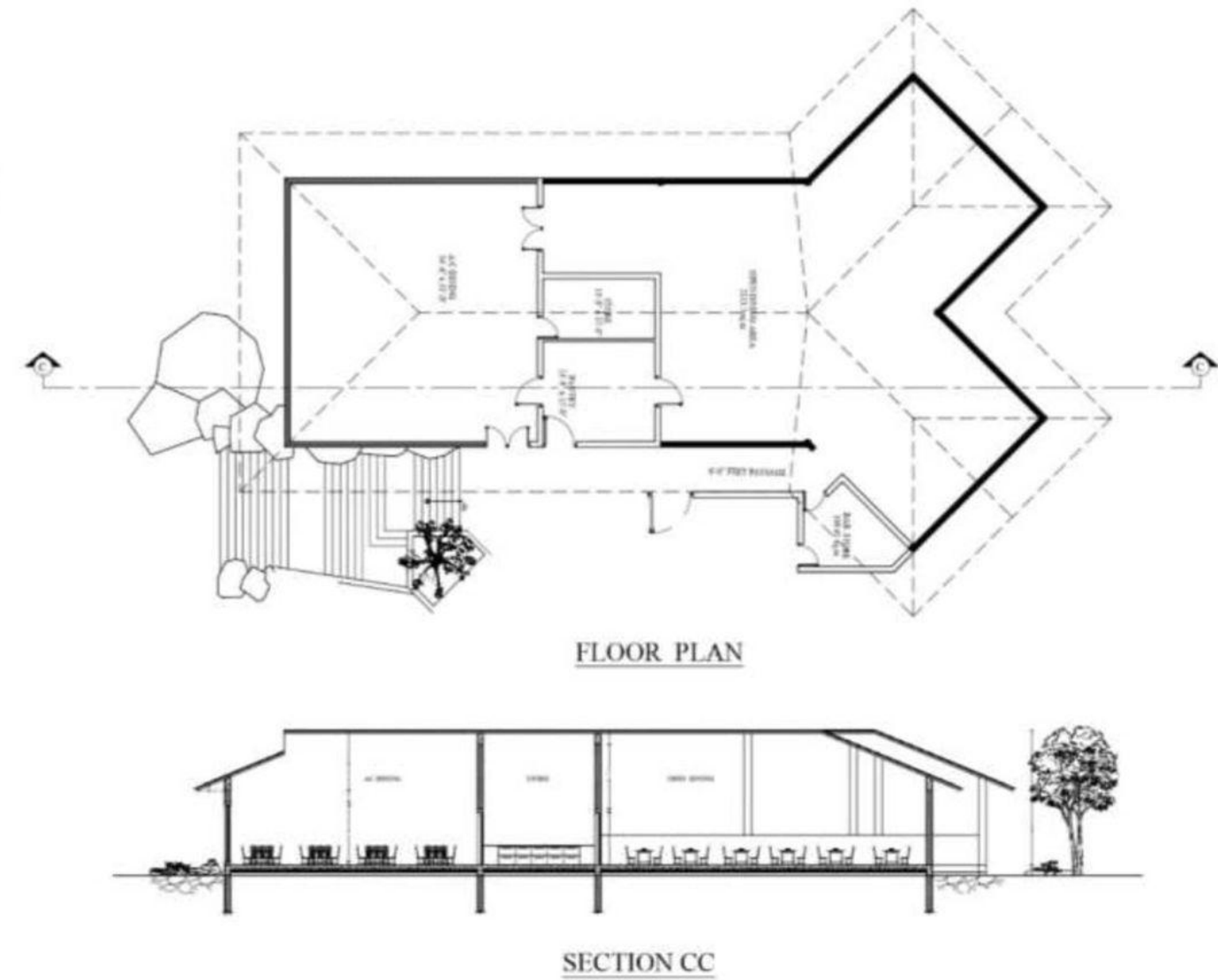
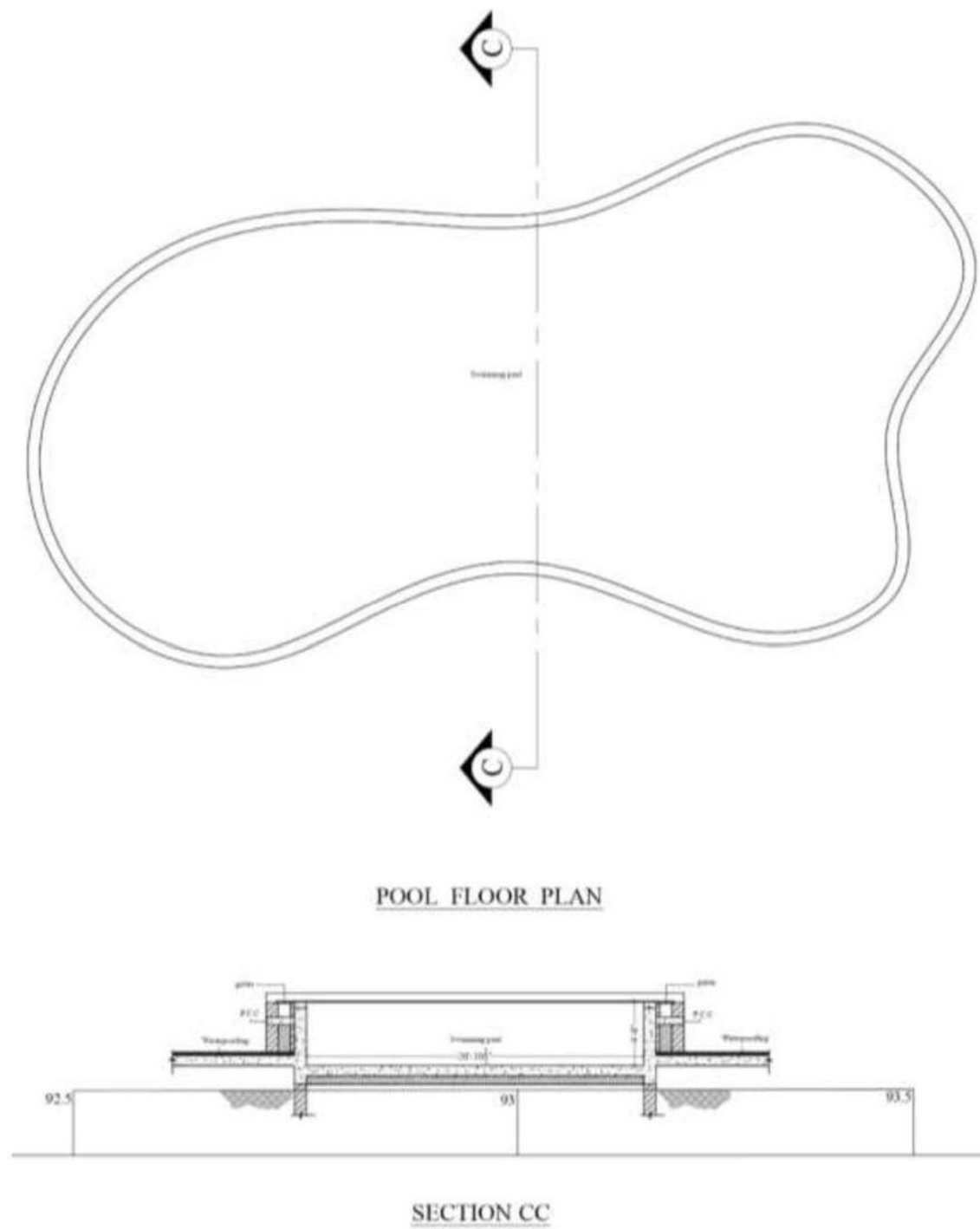


Villas floor plan



SECTION AA

Commercial Resort design



TYPOLOGY: Residential Landscape design

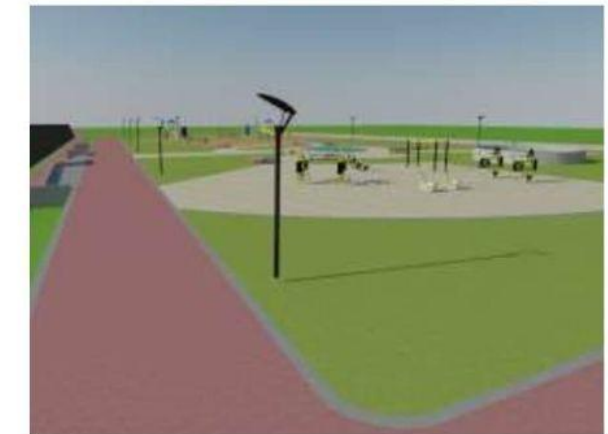
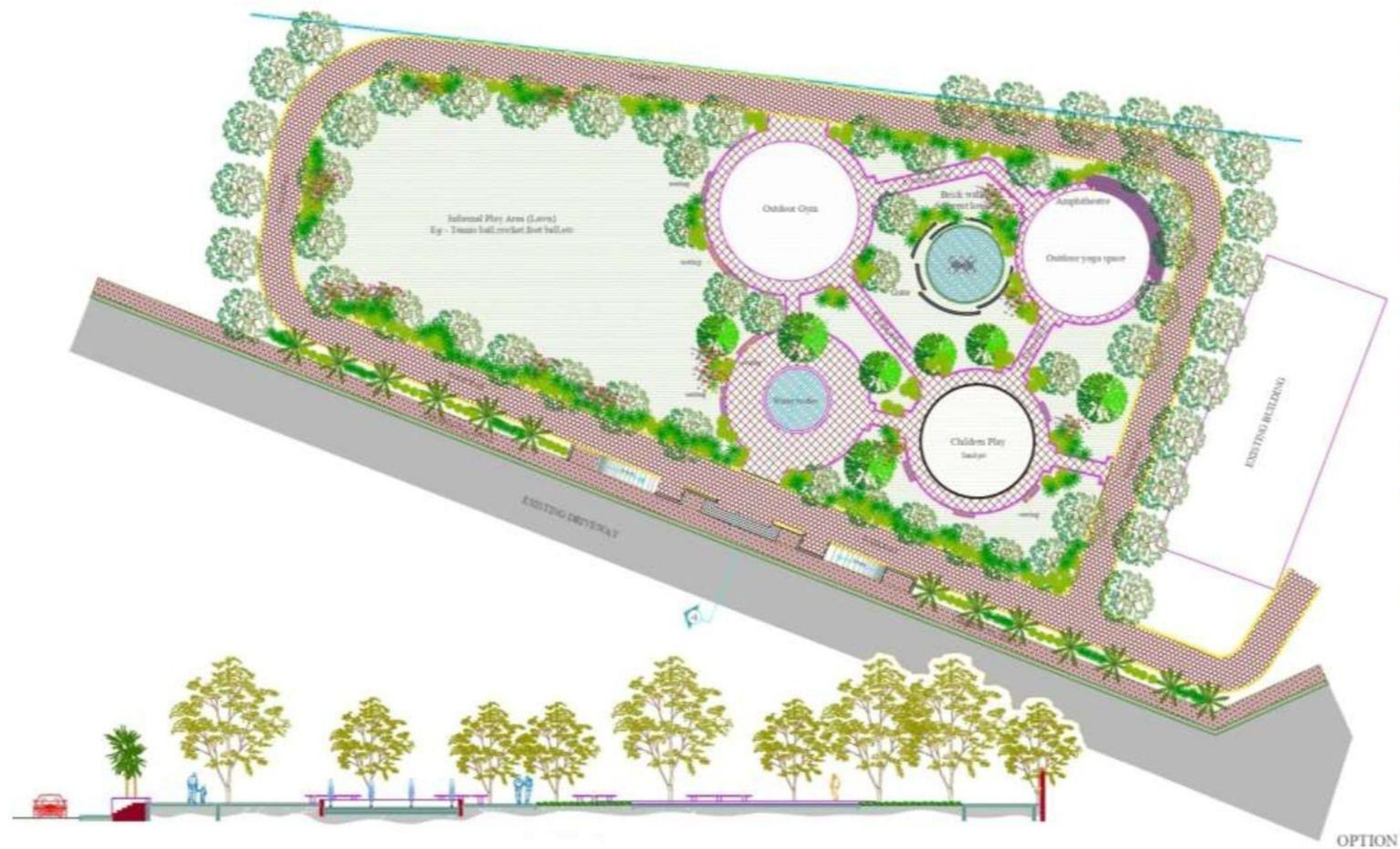
CLIENT:

LOCATION: Kallavakkam

STATUS: On Going

BUILT UP AREA: 4117 Sqft

- The project focus on landscape designing for OSR at kallavakkam along with the landscaping of the site.
- The landscape design incorporated various activities blended with the landscape.
- The zoning for the site is done in such a way the provision of entries exits are at an easy accessibility.



TYPOLOGY: Commercial Office Furniture Design

CLIENT: Mrs.Nandini

LOCATION: Egmore

STATUS: On Going

BUILT UP AREA: 2747 Sqft

- The project focus on furniture designing for office at egmore.
- The furniture design incorporated various standards blended with the office space.
- The furniture's are designed based on the zoning and the spatial requirements.



TYPOLOGY: Residential entrance design

CLIENT: B&B Builders

LOCATION: Karanampattu

STATUS: On Going

BUILT UP AREA: 3804 Sqft

- The project focus on the entrance designing along with the designing of the landscape for the site.
- The project is proposed with three options of the entrance.



Option - 1



Option - 2



Option - 3