

64<sup>TH</sup>  
NASA  
ANNUAL  
REPORT  
(2021-22)



GRASSROOTS



17<sup>th</sup>-18<sup>th</sup> July 2021

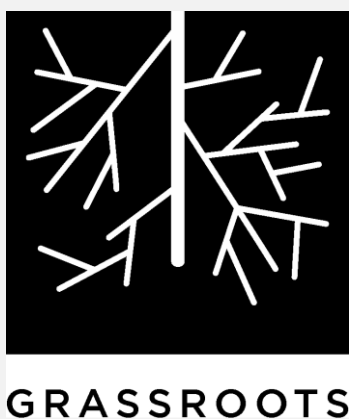
## ■ Annual General Body Meeting

The Unit Secretary and Unit designee attended the AGBM on 17<sup>th</sup> July and 18<sup>th</sup> July.

The elections were conducted for the selection of 64<sup>th</sup> year Executive council and zonal council.

- 27<sup>th</sup> July 2021

## ■ 64<sup>th</sup> Year Annual Theme



64th Year Annual Theme | 2021-22



GRASSROOTS

The association has for the last six and half decades grown strong and it has kept on reinventing itself with the changing times. With technology setting in, the size of our association becoming humongous and with Covid, we look towards a different horizon where NASA India isn't just about coming together and growing but it evolves into an organisation which reaches to you.

We have been, as an entity, have strived to serve the students. The side effect of that has been that we haven't been able to rally everybody around to be a part of this experience. We have been targeting an outreach towards our own members instead of having them along on our side and aim towards the betterment of our society.

This energy of 60,000+ members is not only to be reached out to but is to be channelled as well to community development. When NASA India serves our society and communities together, we will grow together. This paradigm shift is necessary at the National, Zonal and Unit Level. Each Unit should be volunteering and enriching communities around them, this will need proactive leadership and programs at unit and national scales.

Whenever something new is proposed in our association, we ask how can this help an architectural student? I suggest adding one more question to the filter, how can this help the society? I am certain that any experience gained through such a program with an architectural bent of mind will help a design student develop skills which would otherwise take decades to learn.

So, if this goal seems too steep to climb and this theme is supposed to invigorate you, I'd like to quote Jed Bartlet from West Wing,

*"Never doubt that a small group of thoughtful and committed individuals cannot change the world. Because that is the only thing that ever has."*

Off to the grassroots!

Simarjeet Singh Nagpal  
National President | 2020-2021  
National Association of Students of Architecture, India  
simarjeet@nagpal.one



## ■ **At Unit Level**

### **20<sup>th</sup> August 2021**

The Senior Unit Council had a meeting where we decided the tentative dates to send the forms for the Junior Unit Council selection. The dates were 28-29<sup>th</sup> August.

### **28<sup>th</sup> August 2021**

The message containing the information and link to fill the forms for the interviews was circulated. The deadline was until 9pm on the same day.

### **2<sup>nd</sup> September 2021**

The interviews were conducted on google meet.

### **4<sup>th</sup> September**

Introduction to GSC (Global Sustainability Cohort)

### **5<sup>th</sup> September 2021**

Junior Unit council is been introduced to the Senior Unit council.

### **7<sup>th</sup> – 9<sup>th</sup> September**

### **64<sup>th</sup> Year Zonal Council Meet- Zone 3**

Constitution and amendments are discussed, basic NASA details was given to the Units.



# ■ NASA UNIT COUNCIL OF 64<sup>TH</sup> YEAR

- UNIT SECRETARY  
Himanshu Kene
- UNIT DESIGNEE  
Rutuja Patil
- ADVISOR  
Rohan Singh
- TREASURERS  
Rehan Bagban,  
Aditya Gavali
- PUBLIC  
RELATIONS  
HEAD  
Aboleer Mali
- PUBLIC  
RELATIONS  
ASSOCIATE  
Yash Pawar





- **NASA Day events conducted by Kolhapur sector units**  
( Z304,Z306, Z312, Z41, Z343, Z345, Z347, Z351 )

## Photography Competition

**PUT YOUR WORK IN FRONT OF THE BEST AND YOURSELF IN SPOTLIGHT.**

ON THE OCCASION OF THE NASA INDIA FOUNDING DAY WE INVITE ASPIRING STUDENTS TO CAPTURE A STORY THROUGH THE FRAMES.

**JUROR,**  
KOLHAPUR AMATEUR PHOTOGRAPHY ASSOCIATION  
@kapa.photography

**HOW TO ENROLL:-**  
- Share a captivating image showcasing some sort of story in the frame, seen through your lens.  
- Your picture should have a minimum size of 5 MB with brief description of 100 words, your name & contact no.

**Terms and conditions:-**  
- Each participant can send only one entry.  
- If there are any queries, contact respective USEC.

**LAST DATE TO SUBMIT - 17 SEPT 21.**

**FRAMES**

Z304 S. O. A. D. Y. P. C. E. T. KOLHAPUR  
Z306 S. P. S. M. B. H. C. O. A. KOLHAPUR  
Z312 A. B. C. A. SANGLI  
Z343 IDEAL C. O. A. KHONDIGRE  
Z345 S. D. P. C. O. A. ISLAMPUR  
Z347 S. G. U. KOLHAPUR  
Z351 D. Y. P. C. O. A. TALSANDE

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## Comic Design Competition

ON THE OCCASION OF THE NASA INDIA FOUNDING DAY WE INVITE ASPIRING STUDENTS TO EXPRESS THEIR THOUGHTS THROUGH THE COMIC.

**JUROR-  
AR. SHANTANU P. JAGTAP  
M.ARCH**

**COMIC DESIGN CONTEST**

Mental health is an important aspect of a student. Hence here is a way for you to express your thoughts and address these issues through a comic.

**Submission guidelines :**  
1.Comic shall be of maximum 5A4 pages  
2.Each participant can submit only one entry

**SUBMISSION DEADLINE- 19 SEPT 21**

Z304 S. O. A. D. Y. P. C. E. T. KOLHAPUR  
Z306 S. P. S. M. B. H. C. O. A. KOLHAPUR  
Z312 A. B. C. A. SANGLI  
Z341 Y. C. A. SATARA  
Z343 IDEAL C. O. A. KHONDIGRE  
Z345 S. D. P. C. O. A. ISLAMPUR  
Z347 S. G. U. KOLHAPUR  
Z351 D. Y. P. C. O. A. TALSANDE

**NASA** National Association of Students of Architecture

# ■ RESULTS



## PHOTOGRAPHY CONTEST WINNERS

ARRANGED BY ZONE 3 (KOLHAPUR CHAPTER)  
OCCASION OF NASA FOUNDING DAY

1ST PRIZE WINNER	2ND PRIZE WINNER	3RD PRIZE WINNER	
			
<b>JINWANI FARSOLE</b> Z306 S.P.S.M.B.H.C.O.A.KOLHAPUR	<b>ANJALI MALI</b> Z351 D.Y.P.C.O.A.TALSANDE	<b>YASH JATHAR</b> Z329 M.M.C.O.A.PUNE	<b>RISHIKA MAHANTA</b> Z320 S.C.O.A.PUNE

### SPECIAL MENTION

			
<b>GAURAV GAWADE</b> Z304 S.O.A.D.Y.P.C.E.T KOLHAPUR.	<b>KETAKI JAWALE</b> Z324 IDEAS,NAGPUR	<b>SHREYA GHATAGE</b> Z345 SHREE.S.D.P.C.O.A.ISLAMPUR	<b>POOJA SAWANT</b> Z351 D.Y.P.C.O.A.TALSANDE
			
	<b>DIPRAJ KOLI</b> Z312 A.B.C.A.SANGLI.	<b>AJIT KUMBHAR</b> Z343 IDEAL.C.O.A.KHONDIGRE	

**JUROR- KOLHAPUR AMATEUR PHOTOGRAPHY**  
► ASSOCIATION ◄  
 **KAPA.PHOTOGRAPHY**

## COMIC DESIGN CONTEST WINNERS

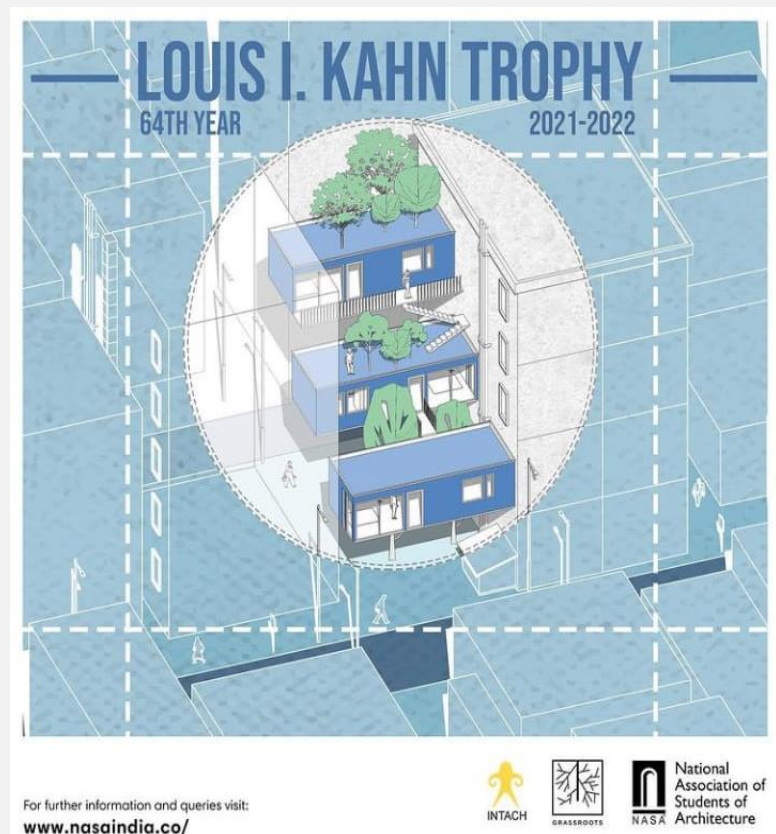
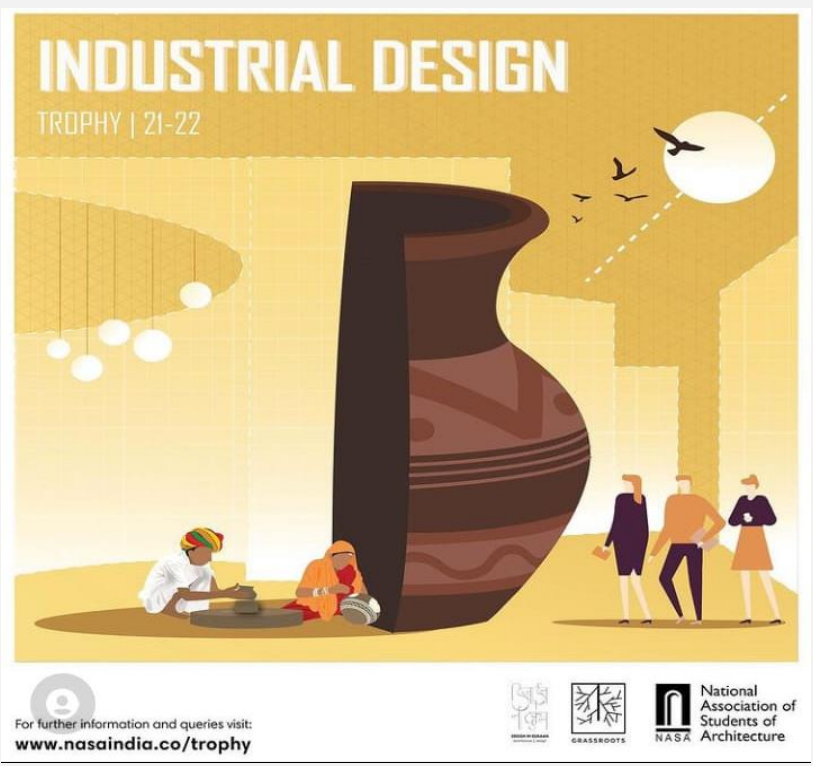
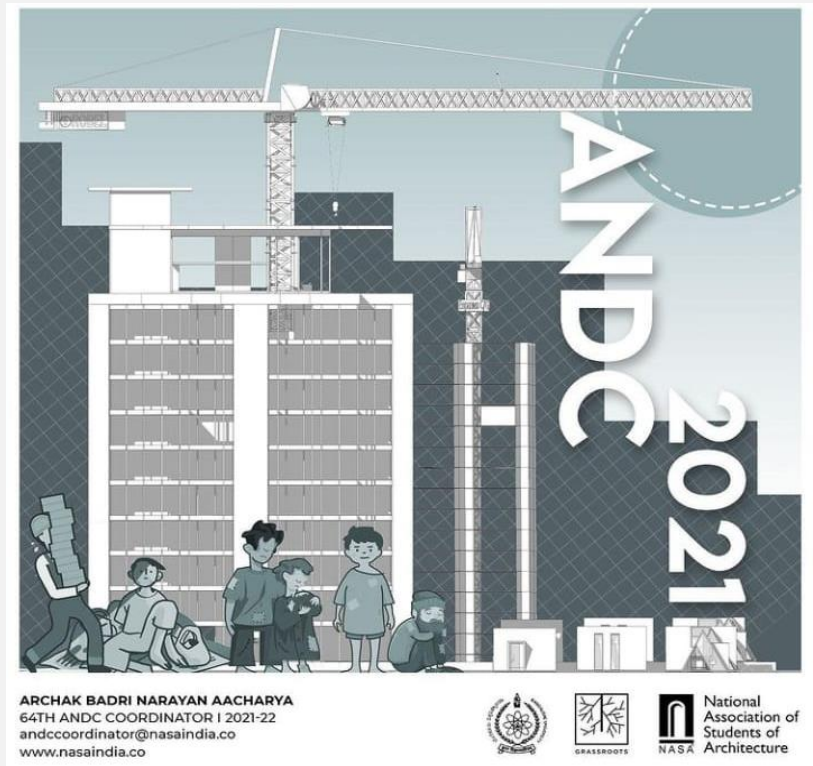
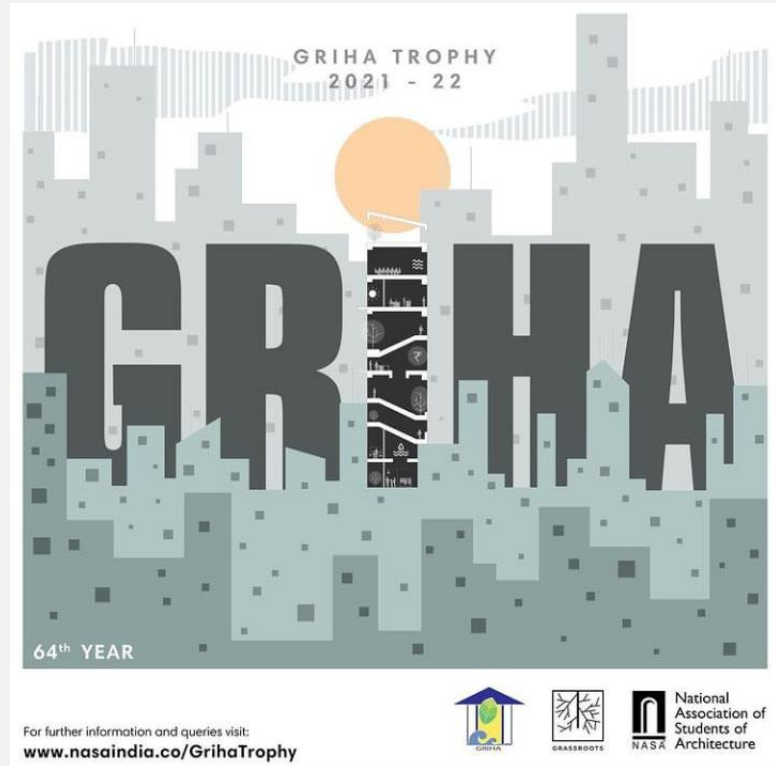
ARRANGED BY ZONE 3 (KOLHAPUR CHAPTER)  
ON THE OCCASION OF  
NASA FOUNDING DAY

1ST PRIZE		
		
<b>ARPITA SATISH SITANAGARE</b> Z310 B. N. C. A. PUNE		
2ND PRIZE		3RD PRIZE
		
<b>NIRANJAN ASHOK MANE</b> Z345 S. D. P. C. O. A. ISLAMPUR		<b>SHRUTI DILIP SHEDSALE</b> Z312 A. B. C. A. SANGLI

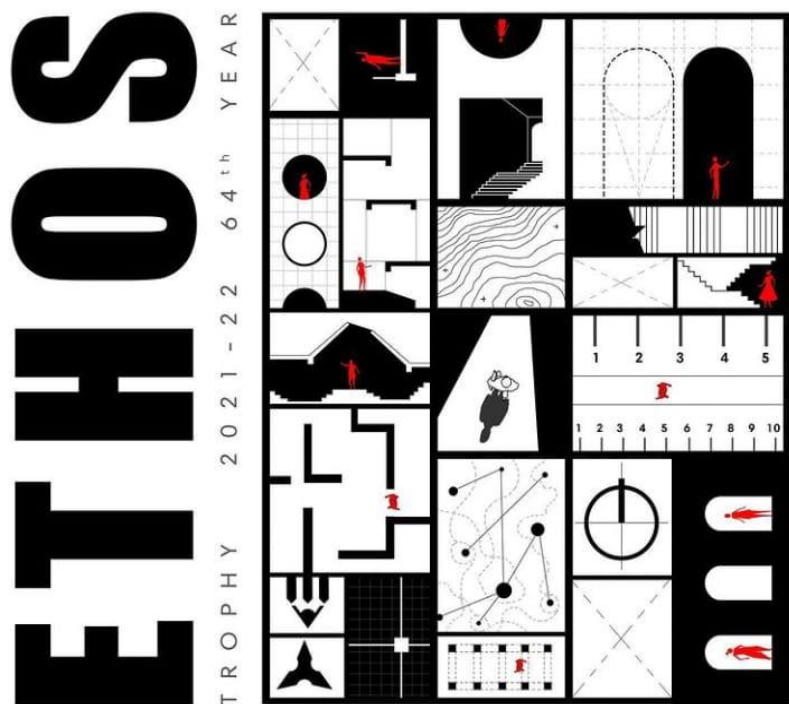
**JUROR- AR. SHANTANU P. JAGTAP(M. ARCH.)**



# • Trophies Released In 64<sup>th</sup> Year

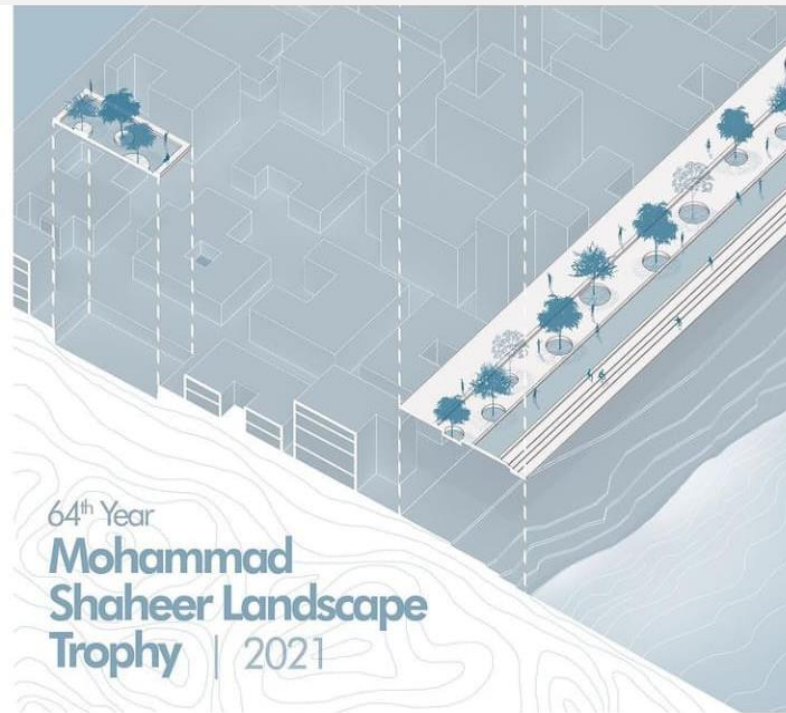






For further information and queries visit:  
[www.nasaindia.co/Trophy](http://www.nasaindia.co/Trophy)

? ethos !!  
[www.ethosengpower.com](http://www.ethosengpower.com)



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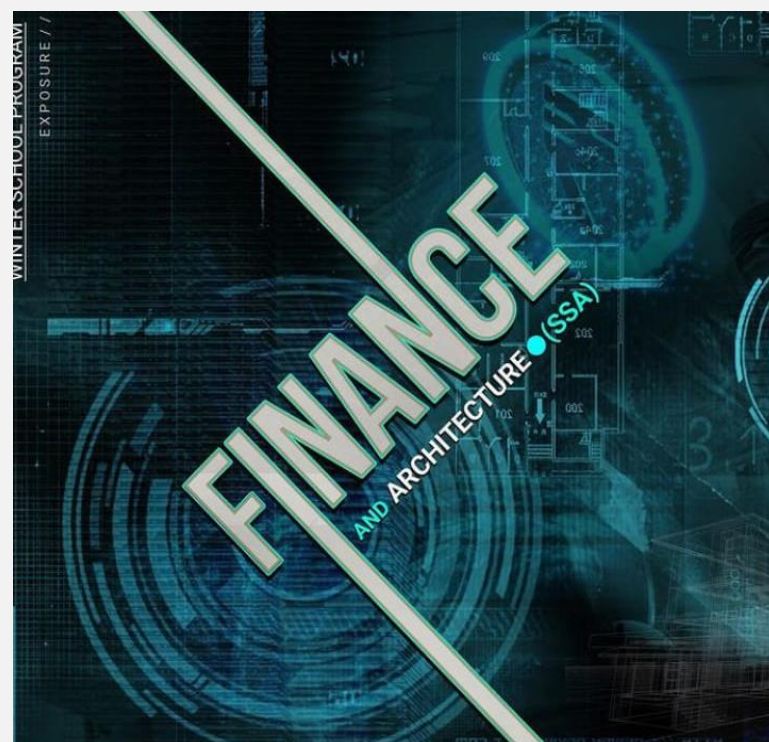
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**TROPHIES  
SUBMITTED  
BY OUR  
UNIT  
(2021-22)**

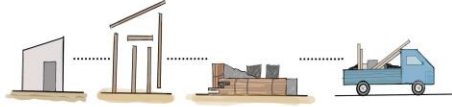
# ■ ANDC TROPHY SHEETS

"No work is insignificant. All the labor that uplifts humanity has dignity and importance and should be undertaken with painstaking excellence."  
-Martin Luther King, Jr.

## INTRODUCTION

The Construction industry of India plays an important part in the development as it creates investment opportunities across various sectors. The construction sector is playing a powerful role in economic growth and produces structures that enhance productivity and quality of life.

A construction worker, who actually materialized the designs on construction sites and is an integral part of the construction industry often, gets neglected. If we trace the architectural history, even though the architectural world has moved on from a hut to tall skyscrapers, the living conditions of workers has not evolved much. It should be made certain that they are provided with an affordable and comfortable space to live in.



## AIM

To design and construct portable buildings to provide security for unprivileged people where they cannot have their own lands – and therefore, aren't able to invest in their own infrastructure. To provide a place which they can call home and a safe haven for their family.

## ABOUT

### 1. MIGRANT LABOURERS

Unskilled workers who move from one region to another in search of employment and form temporary settlement are called migrant workers.

### 2. MOBILE SETTLEMENTS

Temporary houses created for people to reside at for a specific period of time. These settlements can be modular which makes them easy to use since the material isn't bulky and can be carried everywhere.

## PHILOSOPHY

Yin-Yang or "dark-light", "negative-positive" is a concept of dualism, describing how obviously opposite or contrary forces may actually be complementary, interconnected, and interdependent in the natural world, and how they may give rise to each other as they interrelate to one another.



## RELEVANCE IN OUR PROJECT/ DESCRIPTION

Yin describes the situation of the laborers - be their struggles, being mistreated, their lifestyle challenges, etc. Yang describes these very laborers which build these structures and construction field is also dependent on them.

## THREAT TO LABOURS

Modern construction technology: A threat to construction workers

With the modernization in the technology the work left for the workers is reduced a lot. This puts a threat on their jobs.

Modern construction technology	Number manual labour it can replace per day			
	1-5	6-10	11-15	16-20
•Excavators for foundation trenches	4 (19%)	8 (36%)	8 (36%)	2 (9%)
•Drone for site monitoring	22 (100%)			
•Drone for taking pictures	22 (100%)			
•Premix concrete machine	10 (45%)	9 (41%)	3 (14%)	
•Paving machine	13 (59%)	6 (27%)	3 (14%)	
•Self-driven roller compactor	21 (95%)	1 (5%)		
•Robot/machine for inspecting works	20 (91%)	2 (9%)		



SAFETY



FINANCIAL



LEGAL



LIMITED TIME



ENVIRONMENTAL

## WHY AARAMBH?

'Aarambh' means start/beginning. It signifies the beginning of a new way of living appreciation and familiarity.

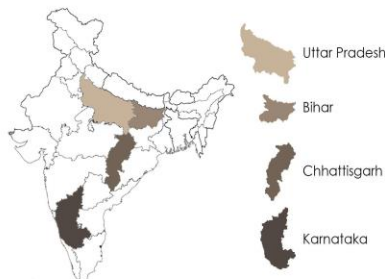
We want to build a culture for the non-locals where they are treated as equals as the builders and contractors. Where this workforce is not neglected but appreciated for their contribution in building this society, literally. Giving the faceless an identity and the voiceless their expression.

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## WORKERS FROM



## CURRENT SITUATION

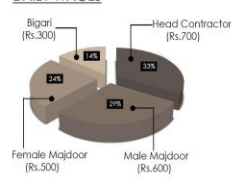
### ROUTINE

The male labourers wake up, get ready and reach the site by 7 am in the morning. The women on the contrary finish all their daily household chores and then go to the site. They return home by 7 pm. They get holidays on sundays and during

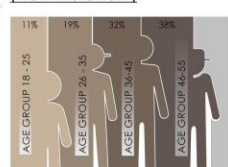
## MIGRANT LABOURERS

People are hired from remote villages and are transported to cities but later get discredited from training, education and safety which make them inherently vulnerable. "Only one out of ten received training specific to their work so that they do not get promoted to 'Skilled Workers' and thereafter any higher positions." Migrant workers are hired for long-term projects while local workers are hired for short-term.

## DAILY WAGES



## AGE GROUP OF WORKER (WORKING ON SITE)



## SOURCES OF FOOD AND WATER

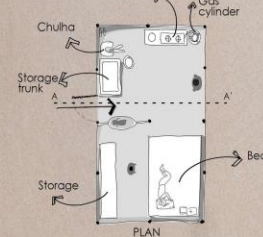
**For Food:** The labourers buy food supplies and groceries from local market which suffice them for one week.  
**For Water:** For daily chores water is provided to the labourers from the bore wells available on site.

## OVERVIEW OF THE UNPRIVILEGED

No proper maintenance strategies were observed on the site as such. The migrant labourers had inadequate amount of resources because they get alienated in the new region. The poor sanitation and hygiene cause severe difficulties that women faced during menstruation. Children of labourers are being raised in unpleasant environment where they are not schooled and do not get proper nutrition. The people there were not aware about their wants and need.

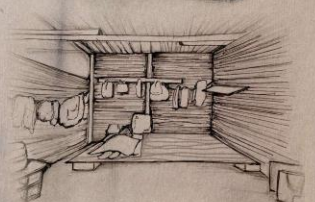
## CURRENT SETTLEMENT CONDITIONS

- During Rainy season they adjust G.I sheets along with substitute elements like Tarpaulin.
- They use G.I sheets or Bamboo for 10' x 12' rooms.
- They have been provided with bricks and plywood as their bed which are uncomfortable.
- G.I sheets are corroded due to wear and tear throughout the years.
- A partition sheets has been provided to certain heights for ventilation but it affects the privacy of the workers.
- Bachelor labourers and the ones with their family reside separately.
- Contractors provide materials for building sheds (for labourers).
- Two toilets are provided with one septic tank each for temporary services instead of pipelines.



## OBSERVATIONS

- The children play in heap of sand, and aggregate which is considered unsafe.
- The stoves used for cooking were provided at very low height which may cause harmful accidents.
- The workers has been provided with adequate spaces but they do not utilize them properly.



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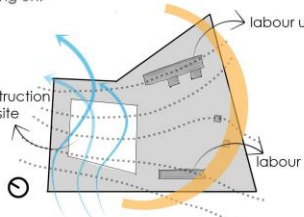




• ANDC TROPHY SHEETS

**LOCATION (OF SITE)**

Latitude – 16° 40'  
Longitude – 74° 14'  
The site is located in Shenda Park, Kolhapur, Maharashtra. The site is located within the campus of medical college where the construction of the hostel is going on.



**CLIMATE**  
Kolhapur has a tropical climate having average temperature 29.2°C to 40°C. The average humidity is 45-52% and average rainfall is 1239mm.

**SITE ANALYSIS**  
The slope on the site is negligible. The estimation of the site is 2 years and currently 30 workers are actively working. The site is located between various medical student hostel blocks.

**S**

The site has lot of space in which the settlement can be built easily.

**W**

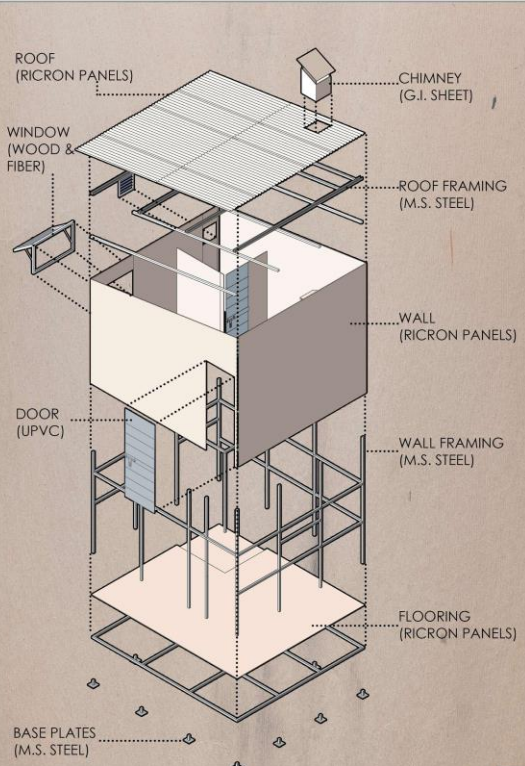
The site does not have a compound wall which isn't safe for the workers.

**O**

Space on the site is sufficient for workers to celebrate any festivals on site.

**T**

The area is less habited & consist of minimum buildings & more barren land.



**DESIGN FEATURES**

- The design has evolved from basic form of the existing structure.
- The roofs are sloping on one side and helps to drain the water off during rainy season.
- Each housing unit has attached bathroom and utility for better convenience.
- Windows are provided in the bathroom and living room for proper ventilation and daylight unlike in the current housing units.
- A chimney has been provided above the stove for the smoke to travel out of the house.
- Ricron panels are made of recycled aluminium and plastic which can be recycled again. It has high compressive strenght, is eco-friendly, waterproof, termite proof, light weight and is resistant to heat.

**ESTIMATION**

MATERIALS USED	QUANTITY	COST(₹)
Ricron Panels for walls, roofs and flooring	29	27,283
Steel rods for framing	44	23,184
Base plates for foundation	13	741
Screw and Holdfast (for joinary)	200	1,500
Doors	50	
Windows	2	1,400
	2	1,221

Total cost of ONE SINGLE UNIT = ₹55,335

Total cost of TWO UNITS = ₹1,10,670  
With one common wall  
Total cost = ₹1,07,400

Total cost of FOUR UNITS = ₹2,21,340  
With two common walls  
Total cost = ₹2,12,838

•For TWO UNITS when we consider a common wall, we save ₹3,270 .  
•For FOUR UNITS when we consider two common wall, we save ₹8,502 .

SECTION AA'

SECTION BB'

PLAN OF SINGLE UNIT (3.5MX4M)

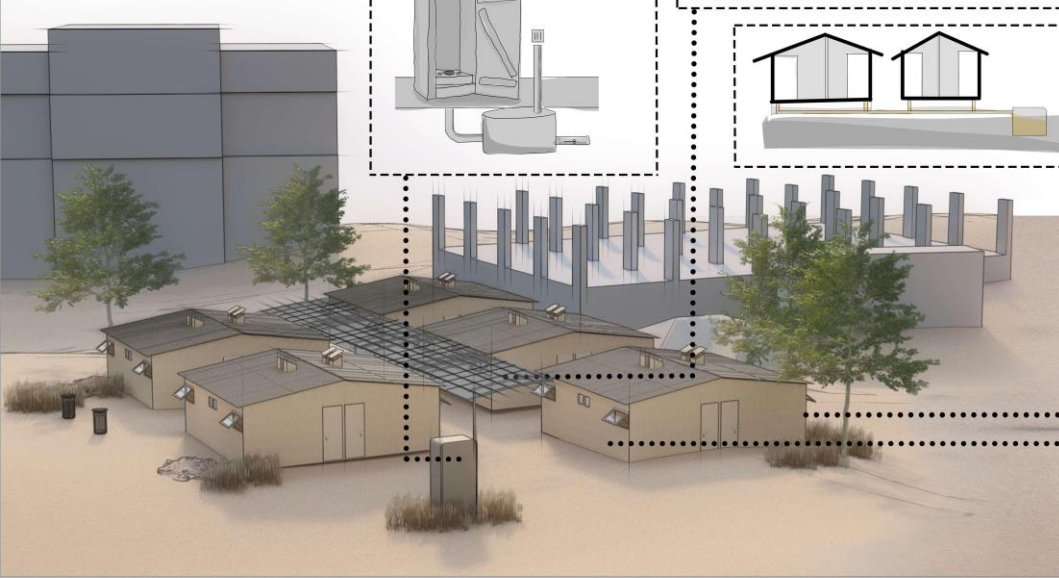
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**SETTLEMENT**

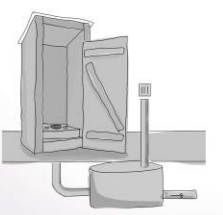
The settlement is designed keeping in mind their comfort, accessibility, affordability. These people will reside in these homes as a community and the settlement compliments this idea. It's designed in a way to help them build a culture by uniting their individualities and backgrounds of their different traditions.



**Gramkranti Eco-Bio toilets**

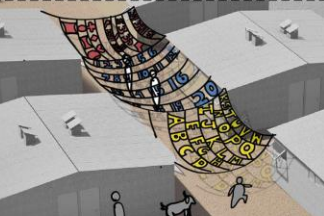
- No solid waste output.
- Needs barely 5-6 L of water.
- No need of sewer network.
- No need of septic, soak pit etc.
- Prevents water contamination in any form.
- Saves infrastructure cost for sewage network and treatment.
- Hygienic conditions prevent diseases.

Cost:  
Tank and seat installation – ₹6000  
Room around the toilet – ₹3078  
TOTAL COST FOR 1 UNIT – ₹9078



**CHILDREN'S PLAYING AREA**

A play area is created in between the units with M.S jall with creative shapes embedded on it that can create curiosity and enjoyment for the children present on the site. The children are at the age where their brains are under development and this way, they will get to learn innovative things.

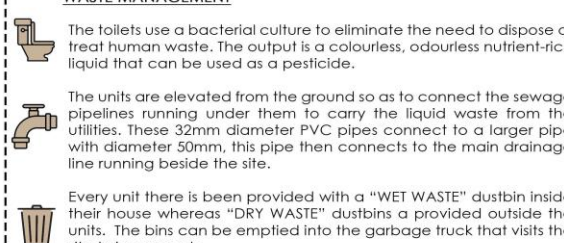


**WASTE MANAGEMENT**

The toilets use a bacterial culture to eliminate the need to dispose or treat human waste. The output is a colourless, odourless nutrient-rich liquid that can be used as a pesticide.


The units are elevated from the ground so as to connect the sewage pipelines running under them to carry the liquid waste from the utilities. These 32mm diameter PVC pipes connect to a larger pipe with diameter 50mm, this pipe then connects to the main drainage line running beside the site.

Every unit there is been provided with a "WET WASTE" dustbin inside their house whereas "DRY WASTE" dustbins a provided outside the units. The bins can be emptied into the garbage truck that visits the site twice a week.




**DRYING AREA**

Bamboo stands with ropes have been designed to dry clothes. This provision can be done outside each unit and the material used is easily available on site.



**SEATING AREA**

Seating benches are given on the edges of every unit using wooden planks and tires. These are created for the workers to gather around in their leisure time and communicate.



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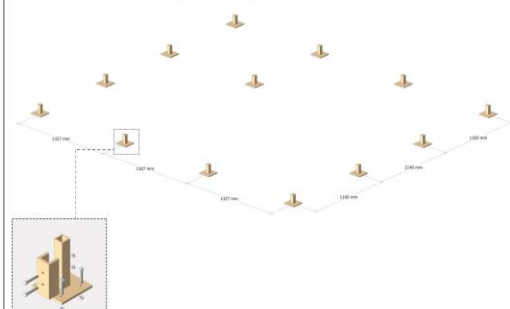


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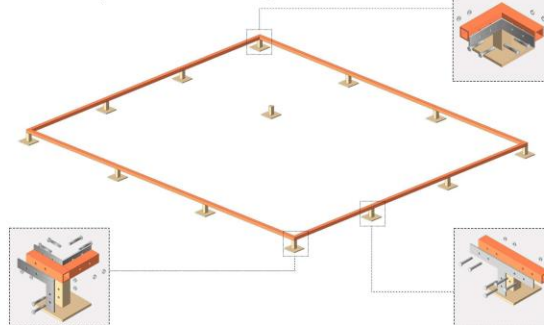
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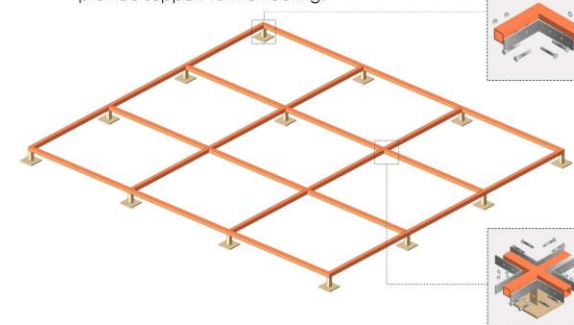
**STEP 1** - Join base plate according to the given dimensions.  
Base Plate - 150 mm X 150 mm.



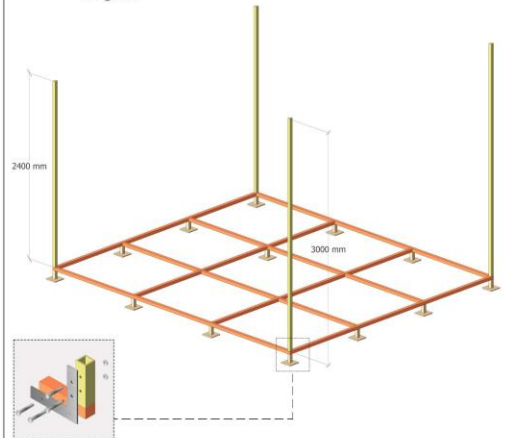
**STEP 2** - Join the square frame on the base plate throughout the perimeter as shown in figure.



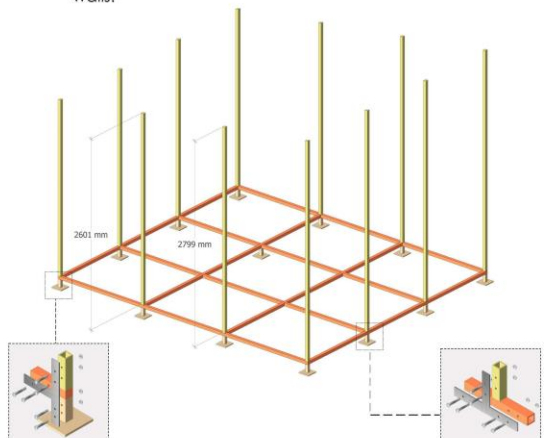
**STEP 3** - Join the frame in a grid as shown in the figure to provide support to the flooring.



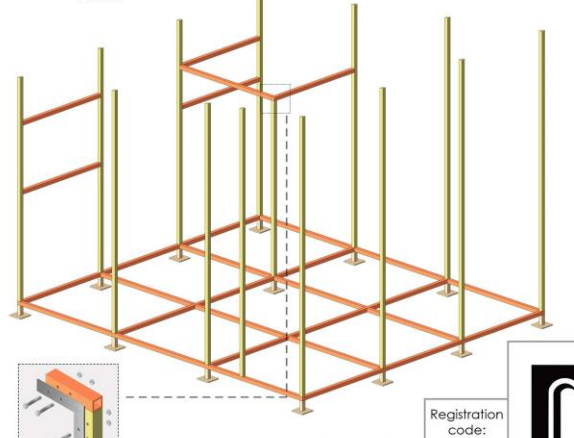
**STEP 4** - Join the corner rods to the base plate, refer the heights as shown in figure.



**STEP 5** - Now join the other rods to the base plate to support the walls.



**STEP 6** - Add internal framing for bathroom walls and also add window and door frame.



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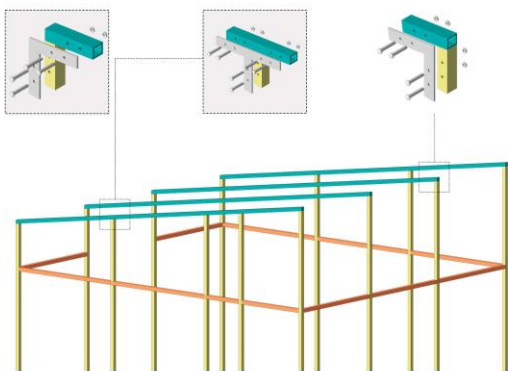
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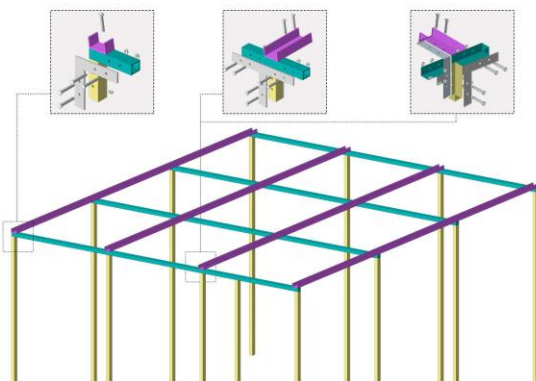


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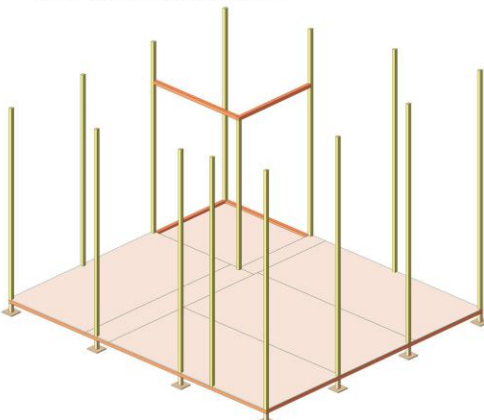
STEP 7 - Join the framing for roof along the breadth.



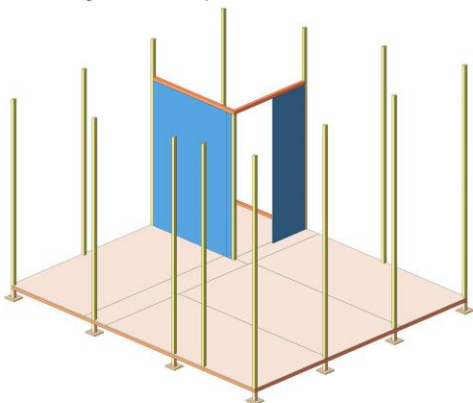
STEP 8 - Now join the framing for roof along the length.



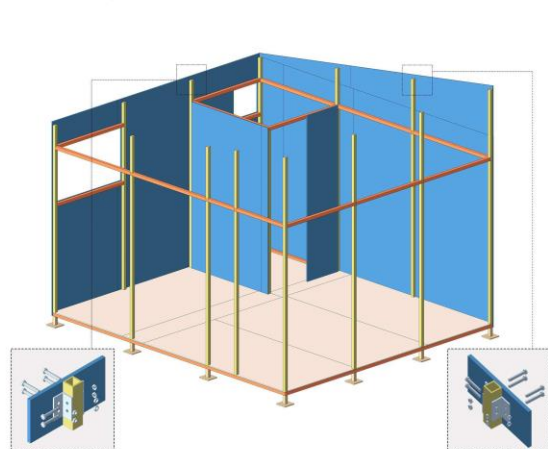
STEP 9 - Join RICRON panels for flooring using epoxin.  
Ricron Panel - 2400 mm X 1200 mm



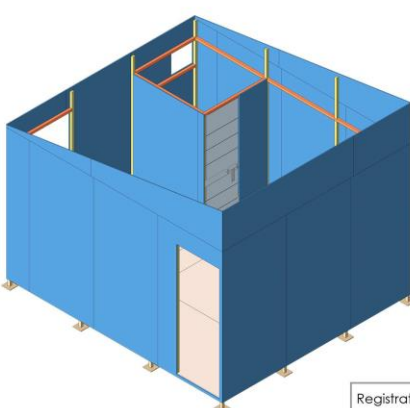
STEP 10 - Join ricron panels to the bathroom frame.  
Height of bathroom panel - 2100 mm



STEP 11 - Start joining panels to the walls of the unit.



STEP 12 - Join panels to all sides of the unit.

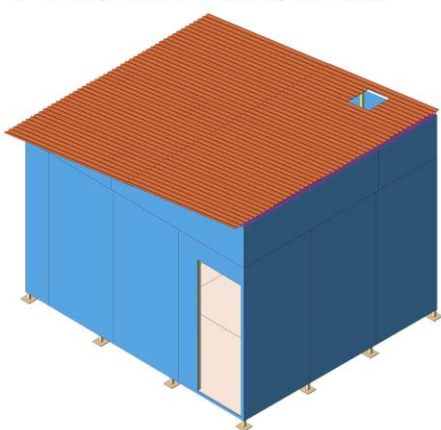


ANDC 2021-22

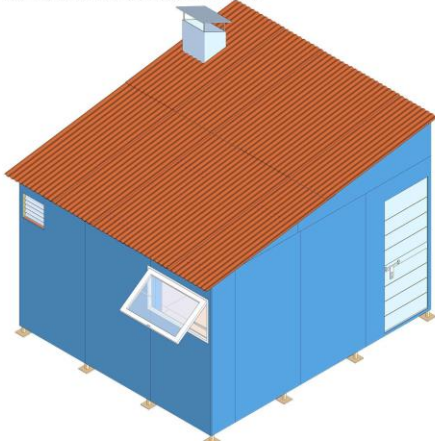
Registration  
code:  
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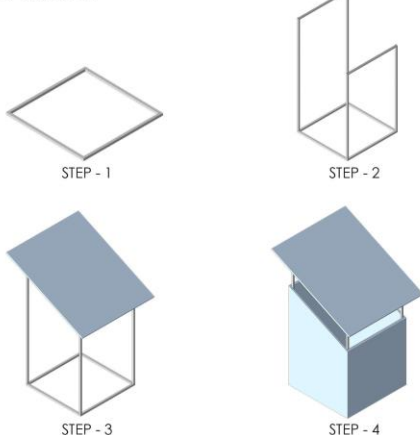
STEP 13 - For roof, join the ricron sheets using nut and bolts.



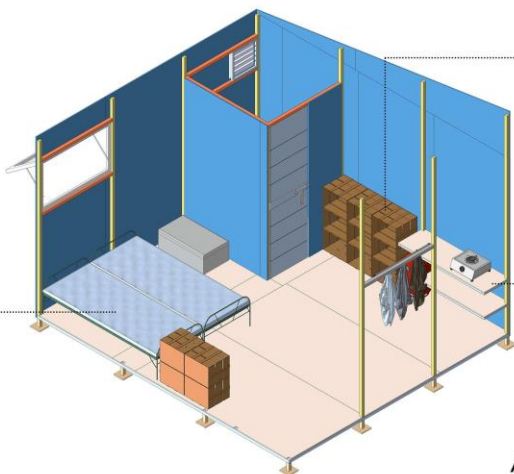
STEP 14 - Fix the doors, windows and chimney.



FRAMING OF CHIMNEY -



ISOMETRIC VIEW



Mango crates are used for storage. They are economical and easily available. Also they are easy to reassemble.

Ricron panels are used as kitchen platform.

ANDC 2021-22

Registration  
code:  
64ANDC-281



Wooden frame is used for windows as they are locally available and economical.



Steel framing is done for door.



## ■ ANDC Trophy Team



- BRIEF : “Solace Of A Soothing Shade In The Oppressive Heat Of Day.” Design A Mobile Settlement To Shelter These Construction Labours Of The Medium Scale Project.
- RELEASE DATE : 13<sup>th</sup> October 2021
- SUBMISSION DATE : 7<sup>th</sup> December
- TEAM LEADERS : Entry 1 - Dishita Vaidya  
Entry 2 - Kalyani Mali
- ACHIEVEMENT : **SHORTLISTED IN FIRST 104 ENTRIES IN INDIA**



# GRIHA TROPHY SHEETS

## BREIF

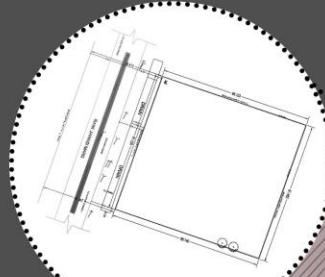
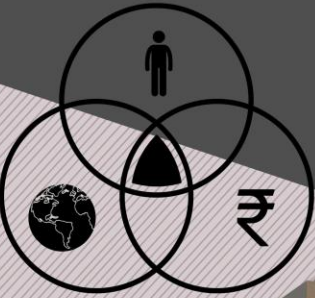
The brief describes to design a sustainable structure that will use minimum energy and also create energy for future use. It also specifies the occupant comfort to be maximum using passive strategies and techniques that will make the structure more sustainable and will enhance throughout the years. Our understanding of the brief is to implement sustainable planning and using the traditional concept of Mughal Architecture which will create a social impact.

## CONTEXT OF THE SITE

The site is located in the city of Ghaziabad. It is surrounded by various government and commercial spaces like market, passport office, café, hospital, etc. In the metropolitan life of Ghaziabad the site is near Rani Jhansi Marg.

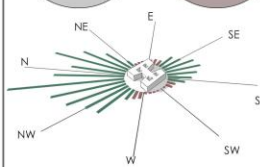
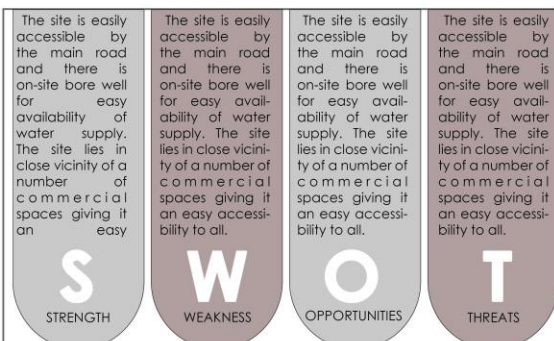
## CULTURE OF THE CITY

The city is also known as Ghaziuddin Nagar. The culture mainly reflects the fine taste of the people of Ghaziabad. Traditional handicrafts are still in existence and occupy an important part of the city's lifestyle. Established in year 1740, it is one of India's most famous centers of Oil Engines Industry.



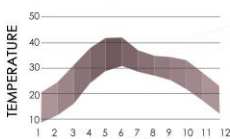
GRIHA Trophy 2021-2022

Registration code: 64GRI-13

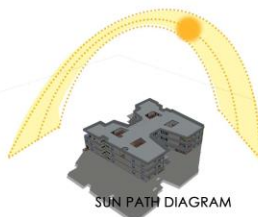


## WIND ROSE

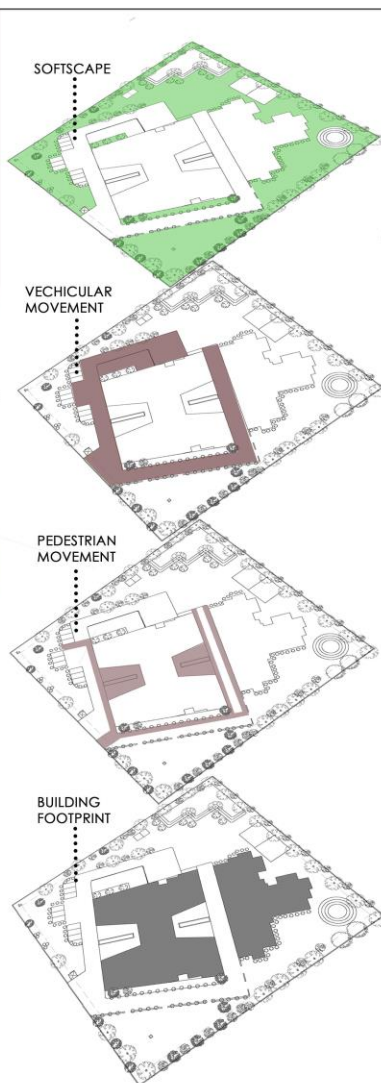
Predominantly the wind path on the site is from North-West.



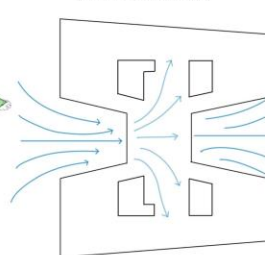
The average temperature of Ghaziabad varies from 7.77°C - 39.44 °C. The city experience uneven rainfall.



SUN PATH DIAGRAM



## WIND TUNNEL EFFECT



## VEGETATION



## AREA CALCULATIONS

SITE AREA - 8959.1 m<sup>2</sup>

Maximum Ground coverage 25%

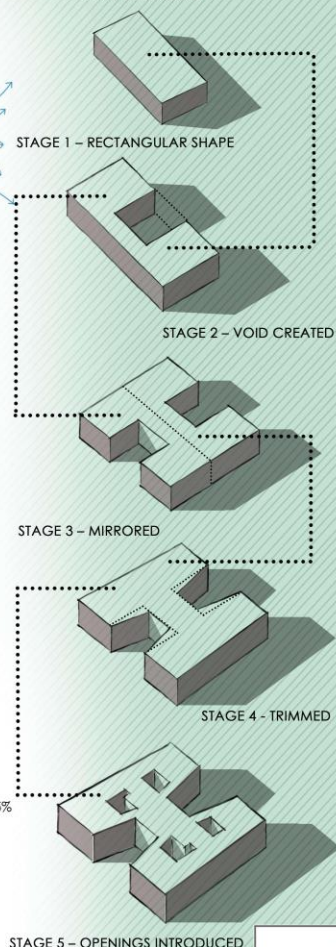
Total built-up area - 2242.52

FAR - 1.5

OFFICE - 1404.86m<sup>2</sup>

RESIDENTIAL-837.33m<sup>2</sup>

## FORM EVOLUTION



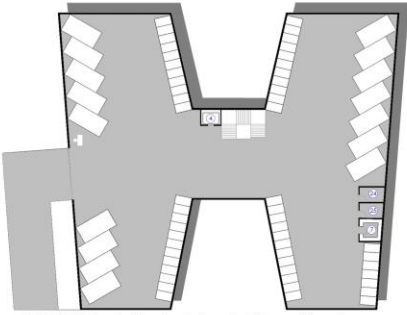
GRIHA Trophy 2021-2022

Registration code: 64GRI-13

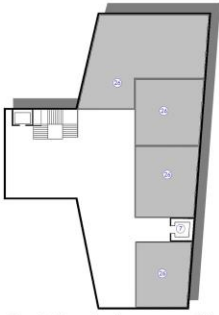




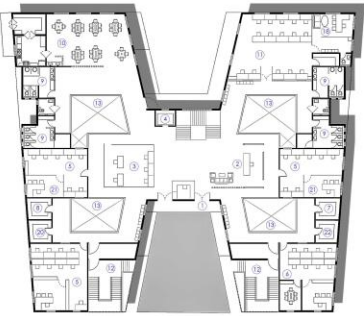
# GRIHA TROPHY SHEETS



**BASEMENT 1** - Parking is designed with provision of shower rooms and changing rooms.



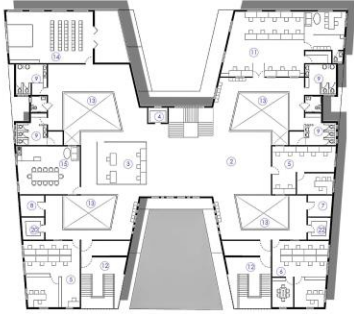
**BASEMENT 2** - Water tanks are provided for rainwater harvesting & grey water filtration. Electrical services are also provided.




**GROUND FLOOR PLAN**

**LEGENDS -**


- 1. Entrance
- 2. Reception
- 3. Ask Centre
- 4. Lift
- 5. Office
- 6. Investigation Department
- 7. Water Service Room
- 8. Electrical Service Room
- 9. Toilet
- 10. Cafeteria & Kitchen
- 11. State Tax Office
- 12. Fire Exit
- 13. Wind Tower
- 14. Social Gathering Area
- 15. Conference Hall
- 16. Office of Minister Of Finance
- 17. Additional Commissioner's Office
- 18. Joint Commissioner's Office
- 19. Corridor Waiting
- 20. Record Room
- 21. Deputy Commissioner's Office
- 22. Store Room
- 23. Staircase
- 24. Changing Room
- 25. Shower Room
- 26. Water tank.



**FIRST FLOOR PLAN**



**SECOND FLOOR PLAN**



**TERRAZZO TILES** are used for flooring as they are durable, bacteria resistant and have low maintenance. They are impervious to water and stain and also give an aesthetic touch.

**DRYWALL** is provided for interiors which improve the thermal and sound insulation. The application of these walls does not include the use of mortar or plaster. It is made

**TERRACOTTA JAALI** is used for easy air flow and adds up to the aesthetical value of the space. Adapting the culture of Ghaziabad Jaali work is used. The thickness of the jaali is 60mm.


**AAC BLOCKS** reduce indoor air pollutants. It is an inert gas with no toxic emissions. It prevents depletion of the fertile soil. AAC blocks provide well insulated interiors by keeping out warm air in summer and cold air in winter thus it reduce load on HVAC system eventually saving electricity.

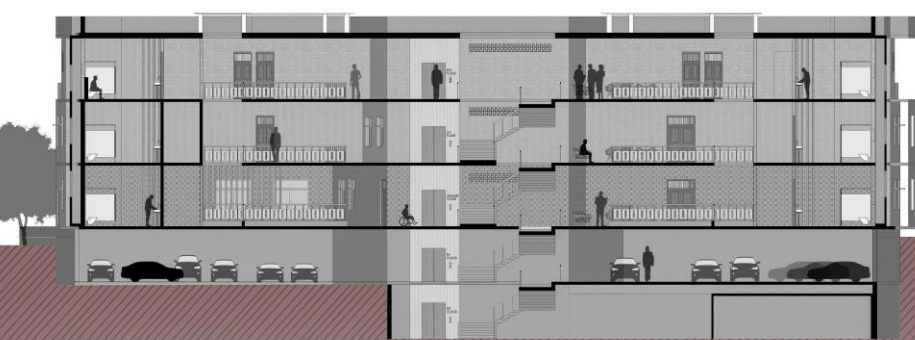
**RECYCLED PLASTIC** - Recycled plastic is used in railing since it is made from household plastics such as plastic bottles and household cleaning product. Hence is lighter and easier to install with low carbon footprint.

**GREEN POCKETS** are implemented to create indoor outdoor environment for the user.

GRIHA Trophy 2021-2022

Registration code: 64GRI-13



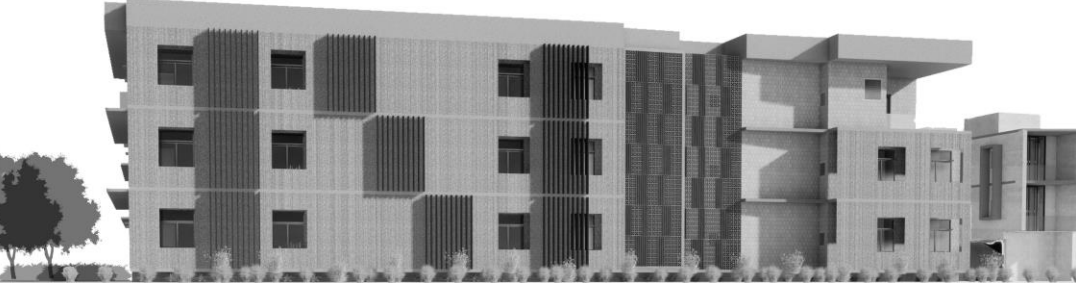


**WIND TOWER**  
Wind tower have been designed to discharge hot air from inside spaces to the vents on top to lead desired wind outside. It absorbs heat in daytime and releases in night. Wind Tower are covered with glass which act as a source of light, ventilation and the sides are covered by Terracotta Jaali.

**LIGHT SHELF**  
It is provided as a natural source of light, ventilation. It helps to reflect day-lighting deep into the building which reduces the energy consumption of the whole structure. It works best in providing an even illumination gradient. It also helps to reduce direct heat gain.


**DOUBLE GLAZED WINDOW**  
It acts as an insulation to the internal space. These are cost effective and they keep the space cooler in summer and warmer in winter. They offer good sound insulation.

**GREEN WALL**  
It acts as living wall which helps to purify the air and gives an ambiance to the structure. The air purification effect of plants is achieved through microbes present on the plant's roots. Green wall benefits the user's health, well-being and also balances with the environment.



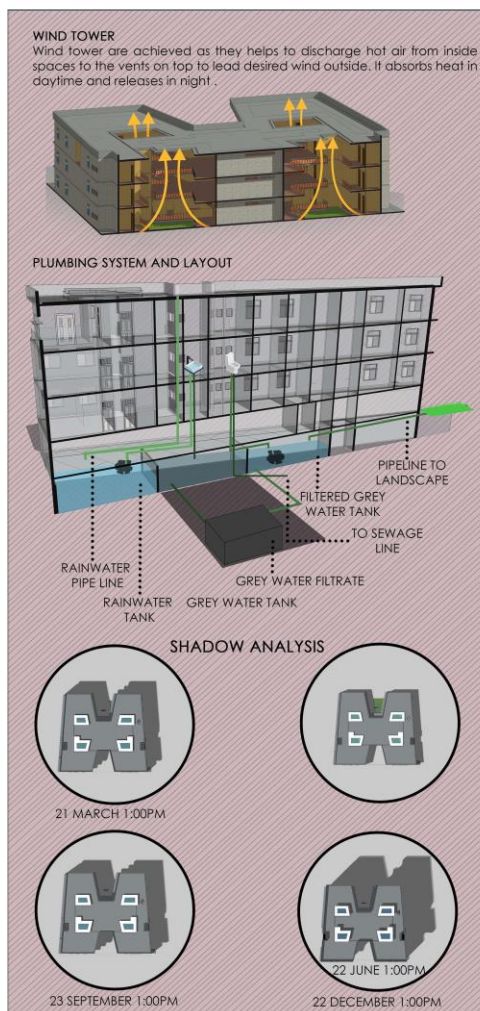
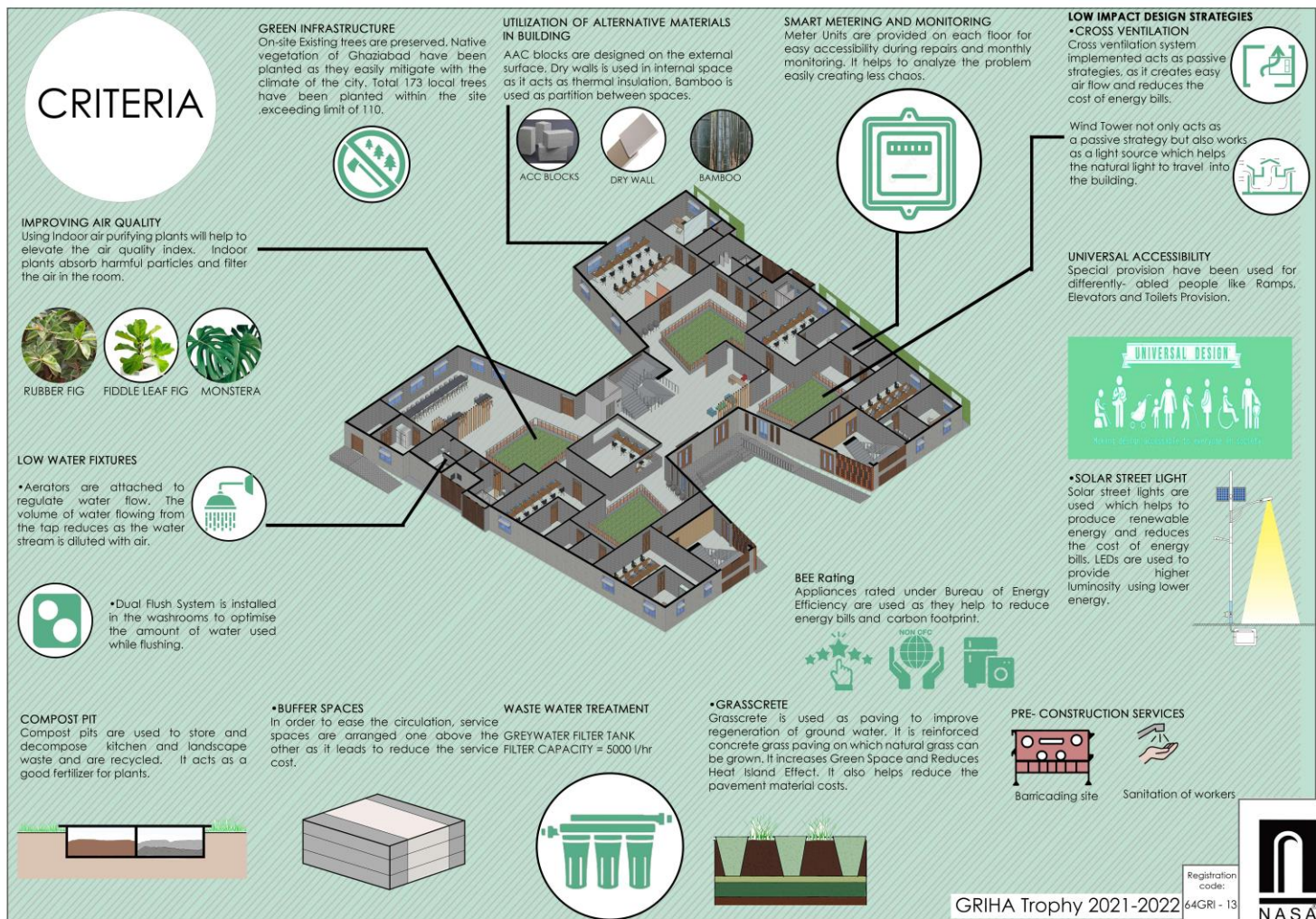
GRIHA Trophy 2021-2022

Registration code: 64GRI - 13





# ■ GRIHA TROPHY SHEETS



**FULLFILLED CRITERIA**

Criterion 1: Green Infrastructure  
Criterion 2: Low-Impact Design Structure  
Criterion 4: Air and Soil Pollution Control  
Criterion 5: Topsoil Preservation  
Criterion 6: Construction Management Practices  
Criterion 7: Energy Optimization  
Criterion 8: Renewable Energy Utilization  
Criterion 9: Low ODP and GWP Materials  
Criterion 10: Visual Comfort  
Criterion 11: Thermal and Acoustic Comfort  
Criterion 12: Indoor Air Quality  
Criterion 13: Water Demand Reduction  
Criterion 14: Wastewater Treatment  
Criterion 15: Rainwater Management  
Criterion 17: Waste Management-Post Occupancy  
Criterion 18: Organic Waste Treatment On-Site  
Criterion 19: Utilization of Alternative Materials in Building  
Criterion 21: Alternative Materials for External Site Development  
Criterion 23: Safety and Sanitation for Construction Workers  
Criterion 24: Universal Accessibility  
Criterion 25: Dedicated Facilities for Service Staff  
Criterion 26: Positive Social Impact  
Criterion 27: Commissioning for Final Rating  
Criterion 28: Smart Metering and Monitoring

### SOLAR PANEL CALCULATIONS :-

#### PRODUCTION :-

TOTAL NUMBER OF PANELS = 63  
ELECTRICITY GENERATION = 450 watt  
STANDARD SIZE OF PANELS = 1.9 m X 0.9 m  
SET OF PANELS = 3.8 m X 0.9 m  
SINGLE PANEL GENERATES = 1.5 kw/day  
SET OF PANEL GENERATES = 3 kw/day  
DAILY ELECTRICITY GENERATION = 189 kw  
ANNUAL ELECTRICITY GENERATION = 68,985 kw

**CONSUMPTION :-**  
BUILDING = 80 kw/day  
RESIDENCE = 30 kw/day  
ELECTRIC VEHICLE = 20 kw/day  
TOTAL = 130 kw/day  
= 135 kw/day (additional miscellaneous consumption)  
ANNUAL ELECTRICITY CONSUMPTION = 35,235 kw.  
REMAINING ENERGY = 54 kw/day  
REMAINING ANNUAL ELECTRICITY = 33,750 kw

#### RAIN WATER HARVESTING :-

ROOF AREA = 1200 m<sup>2</sup>  
ANNUAL RAINFALL OF REGION = 764 mm  
TANK CAPACITY =  
TANK SIZE = 153 m<sup>3</sup>

WATER FILTER TANK  
FILTER = 5000 l/hr

### EPI RATIO :-

EPI = ANNUAL ENERGY CONSUMPTION IN kwh/TOTAL BUILT UP AREA  
= 47,450/2242.52 m<sup>2</sup>  
EPI = 21.15  
EPI BENCHMARK = 90  
REDUCTION = 90 - 21.5  
= 68.5  
PERCENTAGE = 68.5/90 X 100  
= 76.1%

### WINDOW TO WALL RATIO :-

EXTERNAL WALL AREA = 2065.75 m<sup>2</sup>  
TOTAL AREA OF WINDOW = 199.08 m<sup>2</sup>  
WINDOW TO WALL RATIO = EXTERNAL WALL AREA/TOTAL AREA OF WINDOW  
= 2065.73/199.08  
= 10.37

### LCC (Life Cycle Costing) :-

Initial Cash Outflow (Investments made in year 1)	
Particulars	Rs.
Solar Panel (cost incl. installation)	2,25,00,000
Rainwater harvesting equipment	72,00,000
Greenwall Cost	72,11,820
<b>Total</b>	<b>(3,69,11,820)</b>

Interim Cash Outflow (Annual costs incurred)	
Particulars	Rs.
Solar Panel maintenance cost (cleaning and replacement)	5,00,000
Greenwall maintenance Cost	1,44,220
Depreciation (W.N 1)	34,51,182
Operating costs	5,62,830
<b>Total</b>	<b>(46,58,232)</b>

Terminal Cash Inflow (Salvage value at the end of LCC cycle)	
Particulars	Rs.
Estimated Salvage value of Solar Panel	10,00,000
Estimated Salvage value of Rainwater harvesting equipment	6,00,000
Estimated Salvage value of Greenwall	8,00,000
<b>Total</b>	<b>24,00,000</b>

Year	Particulars	Cashflow (Rs.)	RDF @ 10%	DCF (Rs.)
1	Initial CF	(3,69,11,820)	1	(3,69,11,820.00)
1-10	Interim CF	(46,58,232)	6.1446	(2,86,22,972.35)
10	Terminal CF	24,00,000	0.3855	9,25,303.89
<b>Net Present Value</b>				<b>(6,46,09,488.46)</b>

### Conclusion:-

Hence, we conclude that the Life Cycle Costing (LCC) for the next 10 years as ascertained above incur in total an expenditure of Rs. 6,46,09,488.46 at today's value since we considered the factor of time value of money.

GRIHA Trophy 2021-2022

Registration code: 64GRI-13





## ▪ GRIHA Trophy Team



- BRIEF : A GST Building In Ghaziabad (Commercial) Has To Be Designed For Experion Developers. The Design Should Be In Accordance With GRIHA V2019 Rating System.
- RELEASE DATE : 8<sup>th</sup> September 2021
- SUBMISSION DATE : 15<sup>th</sup> December 2021
- TROPHY LEADERS : Aaryash Sankpal  
Nakshatra Parulekar



# ■ HUDCO TROPHY SHEETS



**AIM**

To reinvent the idea of minimalistic housing. To provide a home with comfort, luxury, less effort and that is rooted within the culture.

**INTRODUCTION**

Climate change refers to shifts in temperature and weather patterns. These changes are natural and man-made. "Man-made" refers to peoples' role in increasing global warming which in turn leads to climate change. Climate change harshly affects human race as well as the environment.

Climate change and global warming have put many lives at risk and unfortunately have also caused loss of many lives in repetitive occurrences of natural calamities like floods, droughts, wildfires and others. In these occurrences the poor with no proper shelter are suffering the most.

Housing for all helped people by providing thousands families with proper houses. But in the current scenario it is necessary to create sustainable design and follow green architecture, mainly to reduce carbon emissions and create self sufficient and eco friendly housing for all.

Vernacular architecture has proved to be sustainable and durable throughout the years, the existing traditional structures are standing proof of the same. To create more sustainable and green projects using modern technology is also essential and hence the ultimate solution is to combine the best of both, modern and vernacular to create and promote sustainable architecture and technology.

**BRIEF JUSTIFICATION -**

Climate change has had a drastic impact throughout the world. As India is majorly working towards its promise of net zero carbon emissions, it is simultaneously working towards providing housing for all. It is undeniable that the Indian cities have been greatly influenced by foreign trends, often without considering the context, and this is no different when it comes to architectural trends, resulting in concrete jungles that have replaced green spaces. In a vast developing country like India, geographically and as well as culturally, architects very frequently fall back on vernacular solutions for sustainable and economical design. The vernacular aesthetics has evolved from responses to the need for shelter and protection from the climate and its elements. When these aspects are combined with traditional crafts and organic innovations, the outcome is to create comfortable, inspiring, economical and sustainable designs that are human in scale and vibrant in spirit.

The challenge is to provide solutions and integrate the use of technology smartly and in rightful ways and to keep the vernacular form alive.

**WHY HOUSING?**

Each and every citizen has a right to shelter. With the growing population, large number of families struggle to find a roof over their heads. These people are constantly burdened by uncertainty, unhealthy living conditions, danger of eviction, stress and fear. They are caught in punishing cycles of unpredictable increase in rent, overcrowded conditions, lack of land, and affordable finance. The government of India came up with the policy of Pradhan Mantri Awas Yojana (PMAY), it will ensure no section of society will be left without a home, which considers everyone belonging to scheduled caste, scheduled tribes, and other background classes.

**UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE**

- UNFCCC was established on 21st march, 1994 by the United Nations to take measures against climate change.
- The ultimate objective of all the agreements under UNFCCC is to stabilize greenhouse gas concentrations in the atmosphere at a rate that it will prevent dangerous human interference with the climate system, in a time period which allows ecosystems to adapt naturally and enables sustainable development.
- India made a commitment in the COP26 that by the year 2070, India will achieve the target of Net Zero Carbon Emission.

**PRADHAN MANTRI AWAS YOJNA**

**MIG Medium Income Group**

**LIG Lower Income Group**

**EWS Economical Weaker Section**

**WHEN WAS IT LAUNCHED?**

PMAY-(U) is a flagship Mission of Government of India being implemented by Ministry of Housing and Urban Affairs (MoHUA) was launched on 25th June 2015.

**WHAT IS IT?**

The Mission addresses urban housing shortage among the EWS, LIG and MIG categories including the slum dwellers by ensuring a pucca house to all eligible urban households by the year 2022.

**WHY IS IT NECESSARY?**

A PMAY (U) house ensures dignified living along with the sense of security and pride of ownership to the beneficiaries.

**WHOM DOES IT APPLY TO?**

The beneficiaries include Economically Weaker Section (EWS), Low Income Groups (LIGs) and Middle Income Groups (MIGs).

**HOW DOES IT WORK?**

The scheme is divided into In-situ Slum Redevelopment (ISSR), Credit Link Subsidy Scheme (CLSS), Affordable Housing in Partnership (AHP), Beneficiary-Led Construction (BLC). The EWS category of beneficiaries is eligible for assistance in all four verticals of the scheme. LIG and MIG comes under only Credit Link Subsidy Scheme (CLSS). It is implemented in three phases-

Phase I- from April 2015 to March 2017 to Cover 100 cities.

Phase II - from April 2017 to March 2019 to cover additional 200 cities

Phase III - from April 2019 to March 2022 to cover remaining cities.

Vernacular

**WHY VIRASAT?**

"Virasat" means legacy that's been passed on to us by our forefathers. It is our culture, our practices, our tradition, our people as well as their collective experience. Our Virasat is vernacularism which brings all of these aspects of society together and enriches it. Vernacularism preserves the versatility of religions and culture which keeps our traditions alive and this is how tradition shapes life.

**CLIMATE RESPONSIVE**

**COST EFFECTIVE**

**LOW CO2 EMISSIONS**

**RECYCLE REUSE**



# HUDCO TROPHY SHEETS

## CLIMATE

### WHAT IS CLIMATE CHANGE ?

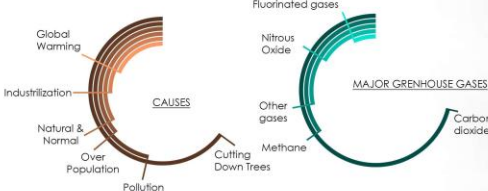
Climate change includes rise in temperatures, intense droughts, water scarcity, severe forest fires, rising sea levels, flooding, melting of glaciers, storms and declining biodiversity.

### CAUSES

Many of the greenhouse gases occur naturally, but it's the human activities that increase the concentrations of some of them in atmosphere; in particular carbon dioxide (CO<sub>2</sub>), methane, nitrous oxide, fluorinated gases etc. The main influencer of climate change is the greenhouse effect.

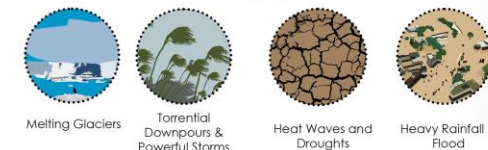
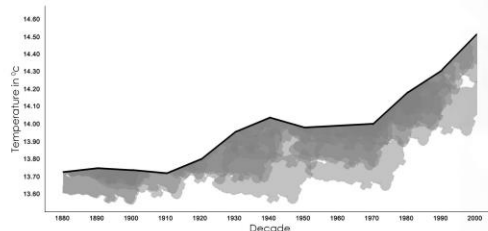
### CAUSES FOR RISING EMISSIONS -

1. Burning of coal, fuel, etc.
2. Cutting down forests (deforestation).
3. Increasing livestock farming.
4. Use of fertilisers containing nitrogen
5. Emission of fluorinated gases



### IMPACT OF CLIMATE CHANGE

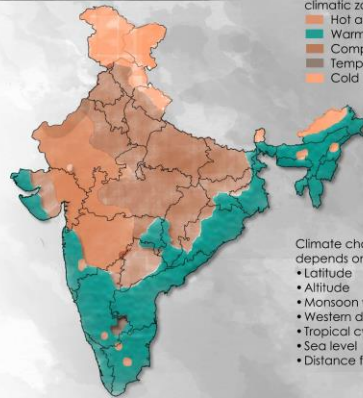
#### Rise in temperature



### INDIA'S ROLE IN CLIMATE CHANGE

About 60.2% of India's electricity is generated from fossil fuels out of which 51% is generated from coal. The country emits 7% of global emission. Affects: A temperature rise of 0.7°C has been observed between 1901 to 2018 in India due to climate change.

## CLIMATIC ZONES OF INDIA



India is a vast country. It is divided into 5 climatic zones:  
 • Hot and Dry climate  
 • Warm and Humid climate  
 • Composite climate  
 • Temperate (Moderate climate)  
 • Cold (Cold and Cloudy, Cold and Sunny)

Climate change throughout the country depends on following factors:

- Latitude
- Altitude
- Monsoon winds
- Western disturbances
- Tropical cyclone
- Sea level
- Distance from sea

## CONSEQUENCES



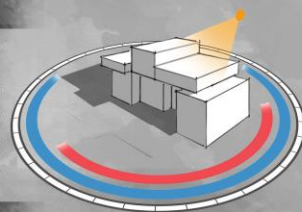
## GEO -CLIMATIC REGION OF INDIA- WARM AND HUMID

Cities that come under this zone - Thane, Raigad, Ratnagiri, Sindhudurg, Kolhapur, Sangli, Pune, Satara, etc.

- Temperature - Mean max. during day is 27 to 32 C, mean minimum during night is 21 to 27 C.
- Rainfall - annual rainfall of 400 to 750 mm
- Wind - wind velocity is low, calm, periodic and strong during rain squalls.
- Precipitation - very high about 1200 mm per year
- Solar Radiation - it is high during summers and moderate during winters.

## BUILDING OBJECTIVES

- To minimize high day temperature.
- To control humidity.
- Provision of continuous air circulation to reduce heat.
- To avoid direct exposure of building surfaces to sun.
- To create temperature difference between indoor and outdoor spaces.



## ORIENTATION AND PLANFORM

- The buildings should be long and narrow to allow cross ventilation.
- Unobstructed air path through the interiors is important.
- Heat and moisture producing areas i.e. toilets and kitchens must be ventilated and separated from rest of the structure.
- Orientation of the building should be along long axes in the east - west direction.
- The openings should be shaded by external overhangs. Outlets should be provided at higher levels to vent hot air.

## BUILDING MATERIALS

[Locally available materials that dominate building construction in this climatic zone] timber, sun dried and kiln burn brick, bamboo, clay tiles for roofing.



**viradhat**  
HUDCO TROPHY 2021-22

02

Registration code: 64HUD-34



## ELIGIBILITY CRITERIA FOR PMAY:

- EWS** ECONOMICALLY WEAKER SECTION  
Income limit of ₹23 lakhs per annum
- LIG** LOW INCOME GROUP  
Income limit of ₹26 lakhs per annum
- MIG** MEDIUM INCOME GROUP  
Income between ₹6 lakhs to ₹12 lakhs per annum  
MIG-I lakhs to ₹12 lakhs per annum  
MIG-II lakhs to ₹18 lakhs per annum

## REQUIREMENTS FOR BENEFICIARY APPLICATIONS

- The beneficiary should not own any property or any dwelling unit on his/her name or in the name of any family member in any part of India.
- The home loans for renovation, improvement, self-construction will be allocated only for EWS, MIG and LIG beneficiaries.
- The houses built under this scheme will be owned by females or jointly with males.

## BLC - Beneficiary Led Construction

BLC is a Centrally Sponsored Scheme (CSS). It provides assistance to individuals/families belonging to EWS categories to either construct new house or to enhance their existing house by providing them Rs 2.5 lakh subsidy per house. Enhancement shall mean addition of carpet area so as to make the whole house 30sq.m in carpet area. The enhanced or newly constructed house should have pakka construction of at least one habitable room, room with kitchen, bathroom or toilet conforming to NBC norms.

## LHP - LIGHT HOUSING PROJECT

LHP is a model housing project under which houses are built with shortlisted alternate technology suitable for geo-climatic and hazard conditions of the region. This will determine and deliver ready to live houses with speed, and better quality of construction, in a sustainable manner and economy. The period of construction is maximum 12 months from the date of handing over the site to construction agencies. LHP has been implemented in 6 different states i.e. Rajkot in GUJARAT, Lucknow in UTTAR PRADESH, Indore in MADHYA PRADESH, Ranchi in JHARKHAND, Chennai in TAMIL NADU, Agartala in TRIPURA.

## ASHA: AFFORDABLE SUSTAINABLE HOUSING ACCELERATORS

ASHA INDIA program is being run in the country to promote research and start ups in modern housing technology. ASHA INDIA has set up 5 centres for providing incubation and acceleration support. The prime minister will release a certificate course on innovative construction technologies named NAVARITH (NEW, AFFORDABLE, VALIDATED, RESEARCH INNOVATION TECHNOLOGIES FOR INDIAN HOUSING) And a compendium of 54 innovative housing construction technologies identified through GHIC INDIA (GLOBAL HOUSING TECHNOLOGY CHALLENGE).

Ganesh and Vijaya Lokre are the residents of Subhash Nagar, Kolhapur. Ganesh is a maldoor/laborer and Vijaya is a housewife. He earns 700 rupees per day. Vijaya's family includes her husband, her two children and her mother-in-law. They belong to the Hindu Chambhar caste under general category. They had a kaccha house on their plot before registering under PMAY - U. They took a loan of 3 lakh rupees for the construction. They were to receive their PMAY subsidies in four installments.

## INTERVIEW I



They had about 30 to 40 thousand savings which was used up during construction. Whatever daily wage Ganesh earned was also used during the construction. The new construction is of 220 sq.ft.

## PMAY-HOUSING FOR ALL PROGRESS DETAILS OF MAHARASHTRA SINCE 2014 TO FEBRUARY 2022

Sr.NO	STATE	HOUSES SANCTIONED	HOUSES GROUNDED	HOUSES COMPLETED
1.	MAHARASHTRA	13,60,394	8,23,951	5,53,241

## PMAY DETAILS OF MAJOR CITIES OF MAHARASHTRA

MEETING AND DATE	DISTRICT	NO. OF EWS HOUSES
25 <sup>th</sup> MEETING - 23 <sup>rd</sup> AUG 2017	KAGAL	432
	TOTAL: 432	
42 <sup>nd</sup> MEETING - 30 <sup>th</sup> JAN 2019	PANHALA	11
	JAISINGPUR	55
	HUPARI	50
	MALKAPUR	30
	KAGAL	68
	TOTAL: 214	
43 <sup>rd</sup> MEETING - 25 <sup>th</sup> JAN 2019	KAGAL	68
	PANHALA	10
	ICHALKARAJI	237
	HUPARI	64
	SAMBHAJI NAGAR	82
	BAWDA	336
	PURKHADI, BALINGA	213
	TOTAL: 1010	
45 <sup>th</sup> MEETING - 25 <sup>th</sup> JULY 2019	KURAUNDWAD NAGAR	120
	ICHALKARAJI	120
	VADGOAN	52
	TOTAL: 172	
50 <sup>th</sup> MEETING - 27 <sup>th</sup> DECEMBER 2019	OVERALL CITY	124
	SHIROL	60
	TOTAL: 184	
	OVERALL TOTAL NO. OF EWS RECORDED SO FAR	2012
	OVERALL TOTAL NO. OF EWS RECORDED SO FAR	2012

## PMAY DETAILS OF MAJOR CITIES OF MAHARASHTRA

Sr.NO	CITY	HOUSES SANCTIONED	HOUSES GROUNDED	HOUSES COMPLETED
1.	NAVI MUMBAI	118582	26937	12037
2.	GREATER MUMBAI	214855	67467	20467
3.	PUNE	132291	88432	67370
4.	PUNE (CB)	744	744	744
5.	SOLAPUR	48867	33063	2585
6.	NASHIK	26381	27815	27584
7.	KOLHAPUR	4887	3270	3066
8.	NAGPUR	40549	18678	13713
9.	AURANGABAD	8972	7814	7678
10.	AURANGABAD (CB)	313	313	313
11.	SATARA	5652	5660	3823

**INFERENCES :**  
The new plan consist of a living room and kitchen on the ground floor and a bedroom and bathroom on the first floor. The staircase is through the parking. The parking was supposed to be 5ft according to the plan but it was reduced to 4ft during construction. Rain water harvesting was mentioned in the plan but the limited area didn't allow it.

## INTERVIEWS OF EXISTING PMAY-(U) BENEFICIARIES

## INTERVIEW II



Kiron Gavali is self employed man with a family of 6. He and his family reside in Subash Nagar. His family includes his wife, his mother, younger brother and two children. They took a loan of 6 lakh prior to the construction of their house.



Total area of construction : 432 sq.ft  
The new plan consists of a living room, kitchen, two bedrooms and a bathroom.

**INFERENCES :**  
There is a R.C.C staircase which runs through the verandah. The living room has a false ceiling. Same as Lokre's this family faces problems regarding safety and privacy since the staircase is from outside the house.

**viradhat**  
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HUDCO TROPHY SHEETS

PHYSICAL CRITERIA	VARIATIONS IN STYLE OF HOUSES IN WARM AND HUMID CLIMATE		
	WADA STYLE HOUSE	KONKANI GHAR	WARLI HOUSE
PLAN FORM	Symmetrical and spatial planning and square grid pattern.	Asymmetrical and spatial planning, linear planning	Planning around the central core.
ELEVATIONS	Grand openings with large headroom are a prominent feature.	The entrance usually opened into a courtyard (angan) that led	The exterior walls were painted with Warli art which depicted scenes of human figures engaged in activities like hunting, dancing, sowing and harvesting. The elevation had a 'Chaukhat' the main entrance.
FOUNDATION TYPE	Stone foundation	Stone foundation	Stone foundation
STRUCTURE	The structure was load bearing.	The structure was mostly on ground and load bearing.	Warli houses were load bearing structure.
WALLS	The walls were 450mm thick made out of black basalt.	Mud walls were constructed with attached piers	Walls were made up of the mixture of branches, earth and red brick. And mud plaster on framework of branches.
FLOORS	Stone tile flooring was used.	Cow dung is used to plaster the floors	Cow dung is used to plaster the floors
DIFFERENT TYPE OF DOORS AND WINDOWS	The doors as well as windows were made out of teak wood and spanned more than the normal 900mm doors.	Wooden panelled doors with wooden frames were used.	'Chaukhat' main entrance of the house was made of bamboo and sometimes wood.
ARCHES	Segmental arches were seen over the windows and doors.	None	None
USE OF OPEN SPACES	Central courtyard is incorporated in the design.	There were no indoor open spaces. Outdoor open spaces included the front yard (angan).	The houses were small and didn't have any internal open spaces.
ROOF	Pitched roof were common with Mangalore tiles as the most excessively used material	Pitched roof with Mangalore tiles were used.	Lean to roof made up of thatches of palm leaves and paddy straw
BUILDING MATERIAL	1. Black basalt 2. Mangalore tiles 3. Teak wood	1. Red Laterite stone / chira stone 2. Mud (plaster and walls) 3. Mosaic tiles 4. Teak wood	1. Thatch (paddy straw, palm leaves) 2. Mud 3. Karvi ([soft stem of Strobilantes CallosusNees plant]) 4. Cow dung
CLIMATE RESPONSE OF WADA ARCHITECHTURE	Wada architecture promotes larger thermal mass to create stable conditions inside the house. Day and night temperatures are indeed lowered since these structures have thick walls and mud plaster due to which the heat is absorbed. These traditional vernacular techniques and materials like the basalt rock are locally available and promote inbuilt passive cooling techniques.	Konkani house promote thermal comfort as the materials such as laterite stone and mud plaster are traditional and climate responsive. The materials provide cooling effect like the cow dung used on the flooring, thus decreasing the humidity.	These are extremely strong and can withstand heavy monsoons. This climatically responsive structure loses heat quite quickly and also allows for air to move in during the hot and humid climate because of its light structure. The thatched roof kept the interiors cool during hot summers.
SOCIAL ACCEPTBILTY	Wadas are a rich and cherished architectural heritage in Maharashtra, reflecting the pride, religion, culture, traditions and turbulent history of Marathas. A form of housing in the past, Wadas today are being re-used and preserved as cultural and architectural heritage.	Konkani houses follow cluster planning which are series of houses formed due to expansion of the family. Konkani houses have a common space which is meant to celebrate the festival, social gatherings of families, traditional rituals etc.	Ancient history states that Warli paintings were used as a means of communication. warli house is considered to be vernacular architecture which was established out of necessity and found to be compatible with climate, local materials ,historical, cultural and traditional influences.
PICTURES			

STUDY OF VERNACULAR ELEMENTS	 • <b>BRACKETS:</b> The brackets are the end details carved on the beam. These details depend upon the culture and family background of the residents.	 • <b>PITCHED ROOF:</b> The pitched roof was one of the predominant features of early WADA architecture. It is strong and resilient and allows proper drainage of water during monsoon. Its easy to maintain and provides proper ventilation.	 • <b>SEGMENTAL ARCH:</b> A segmental arch over a window was a very common feature of Wada architecture. The segmental arch is one of the strongest arches because it is able to resist thrust.	 • <b>POLES (KHUNTI):</b> These were wooden poles emerging out of the walls. They were used to hang clothes or keys by the people. These are a good example of using your vertical space.
	 • <b>WINDOWS:</b> The windows were of two kinds: half windows and full windows. 1. Half windows have four opening panels. 2. The full windows have two panels with carvings.	 • <b>VENTILATORS:</b> These wooden ventilators continuously help refresh the air inside the rooms promoting proper circulation of wind. Being smaller in size these are appropriate to use in congested spaces.	 • <b>WALL NICHES (DEVALI):</b> A niche in wall was created to put candles/diyas inside them. These niches protected the flame from the wind and provided light during night time.	 • <b>SKYLIGHT:</b> The skylights were shaped like Mangalore tiles but made out of glass. Their role was to provide natural lighting during day time.
	 • <b>STAINED GLASS WINDOWS:</b> Another beautiful feature of old houses was these stained glass windows. These provided an aesthetic look to the room.	 • <b>CUPBOARD (KAPAT):</b> Since the walls were very thick in old buildings, cupboards were created by scooping out a small cavity in the walls. These were then given doors to act as a storage cupboard.	 • <b>LOFT (POTMALA):</b> This element was usually found in the villages. A loft was built by the farmers to store the excess harvest or to store food for the cattle. This is another good example of using vertical space appropriate.	 • <b>LEAN -TO-ROOF:</b> Lean-to-roof is a type of pitched roof with a single slope. It is mostly used for cow sheds. The smallest pitch of a lean-to-roof is 1/4:12.
	 • <b>WALLS WITH PIERS:</b> Piers are upright supports for a structure. Piers are most commonly made of concrete, masonry or treated timber, and installed into prepared holes or shafts.	 • <b>SEMICIRCULAR ARCH:</b> It is the strongest type of arch. Its used over the span of larger openings since it can bear a lot of load. In vernacular buildings it is mostly seen in connecting passages between two rooms.	 • <b>WOODEN STAIRCASE:</b> This type of staircases were very prominent in older Wadas. The entire staircase used to be made out of teak wood. Wood is natural, long-lasting and strong.	 • <b>CONNECTING PASSAGES:</b> These passages acted like buffer/transition spaces or partitions between two rooms. These also could be used for separating the private zone from public zone of the house.
STUDY OF VERNACULAR MATERIAL	 • <b>BLACK BASALT</b> 1. Availability – Mainly sourced from Kolhapur. 2. Price – 60 Rs. Per sq. ft 3. Advantages – Cheap Strong and durable Does not corrode easily Stable in nature 4. Disadvantages – Low anti-fouling properties	 • <b>RAW WOOD</b> 1. Availability – Locally available 2. Price – Rs. 190/- 3. Advantages – Easy to construct Heavy load-bearing capacity Provides sound insulation 4. Disadvantages – Vulnerable to water damage, fire, decay.	 • <b>BAMBOO</b> 1. Availability – Locally available 2. Price – Rs. 30/sq.ft. 3. Advantages – Eco-friendly, cheap, fire resistant Adjusts according to temperature variations 4. Disadvantages – Not durable, or smooth Requires frequent maintenance Not moisture resistant	 • <b>MUD FLOORING</b> 1. Availability – locally available 2. Price – Rs 20 /piece. 3. Advantages – Eco-friendly Cheap Provides a decorative look No skilled labour is required 4. Disadvantages– Not durable Requires maintenance Not moisture resistant Doesn't resist heavy loads
	 • <b>MANGLORE TILES</b> 1. Availability – Locally available (native to the city of Mangalore, India) 2. Price – Rs. 14 per piece 3. Advantages – Corrosion resistant Durable 4. Disadvantages – Not wind resistant. Inappropriate for weak structures. Cracks in cold weather	 • <b>KADAPPA STONE</b> 1. Availability – Locally available 2. Price – Rs. 55 per sq.ft 3. Advantages – Hard, non-porous and strong homogeneous material. Anti-slip Cost effective 4. Disadvantages - Needs regular maintenance Not so lustrous	 • <b>ADOBE BRICKS- (MUD BRICK)</b> 1. Availability – Locally available. 2. Price –Rs.7-8/- 3. Advantages – Provides thermal insulation Provides sound insulation Durable yet biodegradable Non-toxic 4. Disadvantages – Not waterproof Low resistance to stain Not safe in seismic area	 • <b>LATERITE STONE</b> 1. Availability – Mostly imported from the Konkani stone (Raigad, Ratnagiri, Malwan) 2. Price – Rs.25 to 30/- per piece 3. Advantages - Eco-friendly Provides thermal insulation Gains strength as time passes 4. Disadvantages - Non-uniform strength Needs dressing Bulky
 <b>STRENGTH</b> 1. Preserving the traditional architecture. 2. Use of local traditional materials. 3. Keeping the traditional and emotional sense of living intact.	 <b>WEAKNESS</b> 1. Association of vernacular with religiousness and specific cultural identity. 2. All traditional materials are not sustainable and green.	 • <b>TIMBER DOORS AND WINDOWS</b> 1. Availability – Locally available 2. Price – Rs. 10,000 - 15,000/- 3. Advantages – Durable and long lasting Easy maintenance Environmentally sustainable 4. Disadvantages – Prone to termites Expensive.	 • <b>PALM LEAVES/ THATCH</b> 1. Availability – Locally available 2. Price – Rs. 385 /sq.ft. 3. Advantages - Eco-friendly Provides thermal insulation Gains strength as time passes 4. Disadvantages - Non-uniform strength Needs dressing Bulky	
 <b>OPPORTUNITIES</b> 1. To promote vernacular as sustainable, secular and green. 2. Being able to replace few traditional elements by modern sustainable economic elements.	 <b>CHALLENGES</b> 1. Breaking the stereotype of vernacular architecture seen as poor. 2. Replacing traditional elements without affecting the essence of vernacularism.	 • <b>COW DUNG FLOORING</b> Cow dung floor was a prime element of traditional houses. It was used instead of tiles and was used before tiles were invented .		



# HUDCO TROPHY SHEETS

## DESIGN A

**SECTION B-B'**

**SECTION A-A'**

**PLAN**

**ACTIVITY MAPPING**

**NORMAL DAYS**

**WEEKENDS**

**EVENTS**

## CONCEPT:

A "home" consists of a physical space which also has an emotional and psychological relationship; where memory, comfort, security, activity and familiarity are some of the many important factors in designing a home.

Our vision is to design a "home" that will blend with its surrounding but at the same time match with the current living/housing standards; a "home" that will show sustainable modernism with a touch of vernacularism.

## DESIGN A

### Legends

Sr. no	Spaces	Carpet Areas (Sq.m)
1	Living room	6
2	Kitchen	8.9
3	Bedroom	9.3
4	Toilet	2.12
5	Entrance Lobby	2.97
<b>Total Carpet Area= 29.29</b>		

## DESIGN B

### Legends

Sr. no	Spaces	Carpet Areas (Sq.m)
1	Living room	7.1
2	Kitchen	7.65
3	Toilet	3.48
4	Terrace	11.25(not include in carpet area)
5	Bedroom	8.25
6	Staircase	3.4
<b>Total Carpet Area = 29.88</b>		

**BUILDING ORIENTATION  
OF DESIGN A**

**BUILDING ORIENTATION  
OF DESIGN B**

## DESIGN B

### ACTIVITY MAPPING

**NORMAL DAYS**

**WEEKENDS**

**EVENTS**

**SECTION A-A'**

**SECTION B-B'**

**GROUND FLOOR PLAN**

**FIRST FLOOR PLAN**

**रोमाइत**

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## EXPLODED VIEW

- It is used to reduce the concrete and steel used in the slab which in turn reduces the cost.
- It acts as a passive air-cooler and provides thermal insulation since it is heat resistant.

**FILLER  
SLAB**

### **COMPOSITE SLOPING ROOF**

- The pitched roof is technically feasible/easy to construct for warm and humid climate.
- The roof is made by using M.S rafters, G.I sheets, bamboo battens and mangalore tiles.
- Traditionally, wooden rafters and battens were used for sloping roofs but they are costly and not environment friendly hence it is replaced by M.S steel rafters and bamboo battens.
- M.S steel is used since its part of the modern construction techniques. It is durable. Bamboo is economically feasible, locally available and environment friendly.
- Mangalore tiles are used as it is heat resistant and locally available.
- Stained glass on the roof provides the maximum use of natural day light which in turn reduces the use of electricity during the day.

### **OTS (OPEN TO SKY)**

- Courtyard was widely used element in vernacular structures.
- In our design we have modified our regular courtyard into OTS (Open To Sky) system.
- This provides natural light, ventilation and enhance that space.

### **RAT-TRAP BOND**

- The traditional bricks are used in rat trap bond which gives an advantage of height of bricks. Being larger in size than our usual modular brick these cover more area in less numbers thus reducing the cost. The size of traditional brick is 230 x 115 x 75 mm; where 115 mm acts as the height in rat trap bond.

### **BAMBOO DOOR AND WINDOW**

- Bamboo is used for window and door frames.
- For Design 8, bedroom sliding door is made with same material. It is an aesthetically pleasing element.
- Bamboo is used as it is economical, sustainable and less carbon emitting material.

### **FLOORING –**

- Terrazzo is used for flooring because it is economically feasible and easily available.

### **LOFT –**

- Lofts were used in traditional houses for storage. The bedroom has a loft of height 2.6m and width of 1.4m, which will also serve the purpose of storage.

### **FLUSH DOORS, WINDOWS –**

- Doors –  
Flush doors are used as they are economical than the usual textured material and is easily available. At the entrance, the flush door is covered with jute fabric which provides aesthetic feature to the door. The entrance door has ventilator on the top; this element improves indoor air quality by promoting proper air circulation.
- Windows –  
Segmental brick arches are used for windows and doors instead of lintel. The idea of using arches is adopted from traditional old structure. Terracotta Jali is used for toilet ventilators; it is economical and also locally available material. Wooden frames and shutters are reused from old demolishing structures.

### **STAIRCASE**

- The staircase is made using a combination of M.S steel frames for tread and riser, and wooden planks are placed over them. This assembly forms a step of width 750 mm. The space underneath the staircase is used for storage. Bamboo is used for railing and balusters.

### **BATHROOM AND TOILET –**

The ground floor unit has the bathroom and toilet located near the entrance; this idea was adapted from WADA structure.

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# HUDCO TROPHY SHEETS

## WASTE MANAGEMENT

Waste management includes the collection, transport, treatment and disposal of waste.



**DRY WASTE MANAGEMENT** - It includes things like paper, glass, plastic, cardboard, rubber, metal, food packaging material, etc. The blue bin is for dry waste and is collected by garbage trucks and is later dumped into landfills.

**WET WASTE MANAGEMENT** - It includes all the kitchen waste, such as, vegetable and fruit peels, leftovers, etc. The green bin is for wet waste and is biodegradable organic waste that can be composted.



### COMPOST PIT - HOW TO COMPOST?

The wet/domestic waste from the kitchen will be collected in earthen planters. These will be filled and kept covered until the waste decomposes in the planters. The mixture of different type of organic materials creates a efficient decomposition. The outcome of this decomposition is fertilizer and manure. This process takes 2 months. This fertilizer can be used for kitchen gardens, plants.

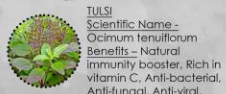
#### BENEFITS OF COMPOSTING:

1. Enriches the soil
2. Easy to install
3. Reduces carbon footprints
4. It is a good homemade fertilizer for the plants

## PLANTATION



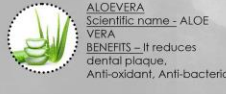
Native landscaping helps re-establish native plant population. Native plants evolve with the local climate, soil types, and amount of rain. This long process brings several gardening advantages. These plants are used for medicinal purposes, food as well as for other various purposes.



**TULSI**  
Scientific Name - Ocimum tenuiflorum  
Benefits - Natural immunity booster, Rich in vitamin C, Anti-bacterial, Anti-fungal, Anti-viral.



**LEMONGRASS**  
Scientific name - Cymbopogon  
Benefits - Helps prevent the growth of bacteria and yeast, Anti-oxidant.



**ALOE VERA**  
Scientific name - ALOE VERA  
BENEFITS - It reduces dental plaque, Anti-oxidant, Anti-bacterial



**SHATAVARI**  
Scientific name - Asparagus racemosus  
Benefits - Improves vitality, Anti-oxidant, Anti-inflammatory, Immunity booster, Anti-aging.



**OVA (Ajwain)**  
Scientific name - Trachyspermum ammi  
Benefits - Anti-inflammatory, Anti-bacterial, Anti-fungal



**CURRY TREE**  
Scientific name - Murraya koenigii  
Benefits - May help in losing weight, Anti-oxidant, Good for the eyesight.

## ANGIKAAR ABHIYAN

Angikaar is a campaign for change management launched under Pradhan Mantri Awas Yojna (Urban) to mobilise PMAY (U) beneficiaries. Its main objective is to engage communication for a happier and healthier living by dedicating themselves to work towards social and environmental goals.

**THIS ABHIYAN CONVERGES FOLLOWING SERVICES/SCHEMES -**

1. SWACHH BHARAT MISSION - Segregation of waste, wet waste in green bin and dry waste in blue bin.
2. WATER CONSERVATION. (Water is life - save every drop) - Rain water harvesting
3. TREE PLANTATION (Go Green) - Plant trees to save environment.
4. ENERGY CONSERVATION- Use LED Bulbs, use Solar Energy Devices.
5. ENVIRONMENT PROTECTION (say no to plastic) - Refuse, Reduce, Reuse and Recycle.
6. AYUSHMAN BHARAT (PM-JAY) - Free Treatment at empanelled hospitals.
7. UJJWALA - Smoke free kitchen for better health.
8. HEALTH & HYGIENE - Maintain hygiene, exercise daily and stay fit.

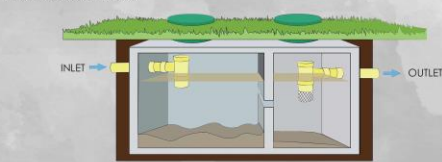


## SEPTIC TANK

Septic tank is an underground chamber made of various materials through which domestic wastewater flows for basic treatment. They can be used in areas that are not connected to a sewerage system, such as rural areas. The treated liquid effluent is commonly disposed in a septic drain field, which provides further treatment.

**Benefits of septic tank:**

1. Durable
2. Environment friendly
3. Easy to install
4. Maintenance friendly



## RAIN WATER HARVESTING



### HOW TO HARVEST?

The most economical way of harvesting water from the roofs or balconies is done by attaching a pipe to its exit pipes. It is done by securing the end of the exit pipes and collecting the water in re-used drums and putting a cloth filter to remove the unnecessary particles from the water. This is a very economical system and requires very minimal investment. This DIY (do it yourself) is easy to install and is capable of collecting 225 litres (litres based on the capacity of the drums installed) within 10 minutes of rain.

#### BENEFITS OF HARVESTING SYSTEM:

1. Economical
2. Requires less to no labor and can be done on your own.
3. Instant water collection
4. Low maintenance
5. Easy installation

## LOW ENERGY HOUSE



1. Larger openings of the house are facing the east side to allow maximum use of natural daylight. This will reduce the use of electricity.
2. The courtyard provides adequate natural light and ventilation throughout the house.
3. The skylight also adds up to provide natural light during afternoon.

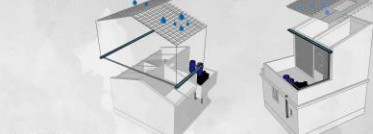
## ENVIRONMENT FRIENDLY HOUSING



Eco-friendly materials have been used at various places. For example:  
• Materials like stone and traditional bricks are reused from demolishing the old structure.  
• Eco-friendly materials are used (bamboo and mangalore tiles).  
• Dado work is made up of waste tiles (recycling and reusing of materials).

## ELECTRICAL LAYOUT AND PLUMBING

### Plumbing Layout -



### Electrical Layout -



### Design A

### Design B

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## ESTIMATION

DESIGN A - WORK QUANTITY								
SR.NO.	ITEM DESCRIPTION	TYPE	NO. OF ITEMS	LENGTH	BREADTH	HEIGHT	QUANTITY	
1	EXCAVATION OF FOOTING	E1	5	1	1.5	1.5	11.25	
		E2	2	1.2	1.3	1.5	4.08	
								TOTAL = 15.93 M <sup>3</sup>
	1.2 EXCAVATION OF GROUND BEAM	GB1	1	3.61	0.43	0.29	0.45	
		GB2	1	3.23	0.43	0.29	0.4	
		GB3	2	2	0.43	0.29	0.5	
		GB4	2	1.12	0.43	0.29	0.28	
		GB5	1	2.36	0.43	0.29	0.29	
		GB6	1	4.38	0.43	0.29	0.55	
		GB7	1	0.63	0.43	0.29	0.08	
GB8		1	2.72	0.43	0.29	0.34		
							TOTAL = 2.89 M <sup>3</sup>	
TOTAL EXCAVATION = 18.82 M <sup>3</sup>								
2	P.C.C. WORK							
		2.1 P.C.C. BED FOR FOOTING	F1	5	1	1.5	0.1	0.75
	F2	2	1.2	1.3	0.1	0.31		
								TOTAL = 1.06 M <sup>3</sup>
	2.2 P.C.C. BED FOR GROUND BEAM	GB1	1	5.8	0.43	0.1	0.25	
		GB2	1	5.15	0.43	0.1	0.22	
		GB3	1	4	0.43	0.1	0.17	
		GB4	2	3.15	0.43	0.1	0.27	
		GB5	4	2.7	0.43	0.1	0.46	
		GB6	1	1.02	0.43	0.1	0.04	
							TOTAL = 1.41 M <sup>3</sup>	
2.3 PLINTH SLAB		PS1	1	43.48	0.1		4.348 M <sup>3</sup>	
TOTAL P.C.C. BED = 6.82 M <sup>3</sup>								
3	R.C.C. WORK IN SUBSTRUCTURE ( CONCRETING )							
		3.1 FOOTING	F1	5	0.7	1.2	0.45	1.89
	F2	2	0.9	1	0.45	0.81		
								TOTAL = 2.7 M <sup>3</sup>
	3.2 COLUMN	C1	7	0.23	0.38	1.55	0.947 M <sup>3</sup>	
		GB1	1	5.8	0.23	0.38	0.5	
		GB2	1	5.15	0.23	0.38	0.45	
		GB3	1	4	0.23	0.38	0.34	
		GB4	2	3.15	0.23	0.38	0.55	
		GB5	4	2.7	0.23	0.38	0.94	
GB6		1	1.02	0.23	0.38	0.08		
							TOTAL = 2.86 M <sup>3</sup>	
TOTAL R.C.C. CONCRETING = 6.5 M <sup>3</sup>								
4	D.P.C. AT PLINTH LEVEL	TOTAL D.P.C. = 30.47 M <sup>2</sup>						
5	BRICKWORK UP TO PLINTH	24.77 0.11 0.31					TOTAL = 0.84 M <sup>3</sup>	
6	R.C.C. WORK IN SUPERSTRUCTURE ( CONCRETING )							
		6.1 COLUMN	C1	4	0.23	0.38	2.1	0.18
	C2	2	0.23	0.38	3	1.05		
	C3	1	0.23	0.38	4	0.7		
								TOTAL = 1.93 M <sup>3</sup>
	6.2 SLAB						TOTAL = 0.36 M <sup>3</sup>	
		TOTAL CONCRETING = 2.29 M <sup>3</sup>						
	7	BRICKWORK	TOTAL BRICKWORK = 26.33 M <sup>3</sup>					
8	PLASTERING	106.8 0.012					1.28 M <sup>3</sup>	
		TOTAL PLASTERING = 1.28 M <sup>3</sup>						
9	FLOORING	TOTAL FLOORING = 39 M <sup>2</sup>						
10	SLOPING ROOF	TOTAL SLOPING ROOF = 54.6 M <sup>2</sup>						

DESIGN A LABOUR COSTING			
SR.NO.	TYPES OF LABOUR	RATE	AMOUNT (INR)
1	CONTRACTOR	10%	27750
2	CENTERING CONTRACTOR	INR 120 / SQ.FEET	60656
3	MASON	INR 120 / SQ.FEET	60656
4	TILE CONTRACTOR	INR 18 / SQ.FEET	7557
5	PLUMBING AND SANITARY	0%	22208
6	FABRICATOR	INR 120 / SQ.FEET	1162
7	ELECTRIFICATION	0%	13880
8	WATER CHARGES	3%	13880
9	ARCHITECTS FEE	3%	13880
			TOTAL = INR 221639
			GRAND TOTAL = MATERIAL COST + LABOUR COST
			GRAND TOTAL = INR 499235



DESIGN A

DESIGN A - MATERIAL QUANTITY AND COST									
SR.NO.	ITEM DESCRIPTION	CEMENT (BAGS)	SAND (M <sup>3</sup> )	AGGREGATE (M <sup>3</sup> )	STEEL (KG)	BRICKS (NO.)	AMOUNT (INR)		
1	P.C.C. WORK	28	1.94	3.88			19792		
2	R.C.C. WORK	46	2.4	4.8	674.92		87127		
3	BRICKWORK	26	3.52			10920	107153		
4	PLASTERING	10	1.73				8917		
5	EXCAVATION			INR 90 / SQ.METER			1694		
6	MURUM FILLING			INR 282 / CUM			3911		
7	D.P.C. AT PLINTH LEVEL			INR 55 / SQ.METER			1676		
8	FLOORING			INR 31 / SQ.FEET			9076		
9	1.1 TERRAZZO FLOORING			INR 44 / SQ.FEET			20953		
10	8.2 CERAMIC TILES			NO. OF TILES = 18			600		
11	8.3 BASALT STONE			INR 60 / SQ.FEET			1937		
							TOTAL=11413		
9	SLOPING ROOF			INR 45 / KG			3757		
10	9.1 M.S. ANGLES			INR 44 / SQ.FEET			4208		
11	9.2 M.S. SHEETS			NO. OF MANGLORE TILES = 443			4202		
12	9.3 MANGLORE TILES			NO. OF BAMBOO = 10			1250		
							TOTAL=22142		
10	DOOR			INR 75 / SQ.FEET			4667		
11	10.1 FLUSH DOOR X 3			INR 75 / SQ.FEET			2081		
12	11.1 PLYWOOD X 2			INR 215 / SQ.FEET			215		
13	11.2 M.S. GRILL			INR 50 / KG			119		
							TOTAL=2171		
12	VENTILATORS			INR 46 / PIECE			119		
							TOTAL = INR 277596		

MARKET RATES							
SR.NO	ITEMS	PER UNIT	PRICE (INR)	SR.NO	ITEMS	PER UNIT	PRICE (INR)
1	CEMENT	BAG	350	9	MANGLORE TILES	TILE	14
2	SAND	M <sup>3</sup>	2120	10	TERRAZZO FLOORING	SQ.FEET	31
3	AGGREGATE	M <sup>3</sup>	1500	11	CERAMIC TILES	PIECE	25
4	BRICK	NO.	8	12	M.S. SHEET	SQ.FEET	44
5	STEEL	KG	85	13	M.S. ANGLES	KG	45
6	M.S. BAR	KG	50	14	PLYWOOD	SQ.FEET	215
7	M.S. SQUARE PIPE	KG	48	15	BASALT	SQ.FEET	60
8	BAMBOO	M	14				



## ▪ HUDCO Trophy Team



- BRIEF : ‘ Vernacular habitats to combat climate change’ vernacular design which will approach with modern design concepts to create novel, sustainable, and resource-conscious solutions.
  - Arrive at proposals based on sustainable principles using adaptive vernacular solutions, beneficiary participation, using materials in the vicinity and indigenous techniques offering rational solutions to the climate and human needs.
- RELEASE DATE : 23<sup>rd</sup> January 2022
- SUBMISSION DATE : 15<sup>th</sup> March 2022
- TEAM LEADER : Abole Mali



## ▪ DANCE Trophy Team



## ▪ FASION Trophy Team



Submission On 19<sup>th</sup> May



# • Working During Trophies





- **INTERMEDIATE GENERAL BODY MEETING ( IGBM)**  
30th April to 1<sup>st</sup> May



Zonal unit council





# 64<sup>TH</sup> ANNUAL NASA CONVENTION (2021-22) Christ University, Bengalore



**CHRIST**  
(DEEMED TO BE UNIVERSITY)  
BANGALORE • INDIA



GRASSROOTS



NASA®



# NATIONAL ASSOCIATION OF STUDENTS OF ARCHITECTURE, INDIA

An ISO 9001:2015 Certified NGO Established in 1957

Registered on 13th September 1993 under  
Societies Registration Act 1860, vide no. 24786  
as applicable to N.C.T. of New Delhi.

HQ: School of Planning and Architecture,  
Department of Architecture, 6 Block B,  
I.P. Estate, New Delhi - 110 002.

**64<sup>TH</sup> YEAR**  
**2021-2022**

**EXECUTIVE COUNCIL**

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**ABINAYA RAVICHANDRAN**  
EVENTS HEAD

**ZONAL COUNCIL**

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ZONAL PRESIDENT  
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ZONAL PRESIDENT  
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**SARANG RAJGURU**  
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**MOHAMMED UZAIR**  
ZONAL PRESIDENT  
ZONE 5

**ERIC ALAN**  
ZONAL PRESIDENT  
ZONE 6

**SIMARJEET SINGH**  
ADVISOR

NASA:64:EH:ARP:004L

Date: 07/05/2022

To,  
The HoD/Principal/Dean/Director

**Subject- 64th Annual NASA Convention 2022**

Respected Sir/Ma'am,

Greetings from NASA India!

This is to bring to your notice that the **64th Annual NASA Convention** is taking place at Z561 - CHRIST (Deemed to be University), Kengeri Campus, Bengaluru, Karnataka, India on the dates **1st - 4th June 2022**. The delegation matrix with the eligible number of students to attend the Convention from the respective Units has been attached along with this letter. Kindly find the same for your reference.

Due to no physical Convention having taken place in the past two years, the Council is delighted to invite three delegates per Unit apart from the qualifying criteria, to all Associated colleges of NASA India by default to the Convention. Please note, it is mandatory for all the Unit Secretaries and Unit Designees to attend the Convention for the Annual General Body Meet.

I look forward to seeing your Unit's enthusiastic participation in the 64th Annual NASA Convention..

Regards,

  
Abinaya Ravichandran Prema  
Events Head | 2021-22  
**National Association of Students of Architecture, India**

+91-9952497081  
eventshead@nasaindia.co  
aazhi.abi@gmail.com



Website:  
[www.nasaindia.co](http://www.nasaindia.co)

Social Media:  
[@wenasaindia](https://www.instagram.com/wenasaindia)



National  
Association of  
Students of  
Architecture







# ARCHITECTURAL SKETCHING BASICS

4<sup>th</sup> JUNE 2022

by  
**Ar. AMIT ASHOKRAO DESHPANDE**

Architectural Sketching Basics is a workshop on basic architectural sketching skills. Understanding the significance of light, lines, strokes, perspective, and proportions are also covered.

1<sup>st</sup> - 4<sup>th</sup> JUNE 2022  
2561 SCHOOL OF ARCHITECTURE  
CHRIST (DEEMED TO BE UNIVERSITY)  
BENGALURU

64<sup>th</sup> YEAR ANNUAL NASA CONVENTION 2022

# A SUSTAINABILITY PATH

2<sup>nd</sup> JUNE 2022

by  
**SHUBHABRATA RATH**

The aim is to bring the best out of young architects and participants, in terms of implementation and sustainability.

1<sup>st</sup> - 4<sup>th</sup> JUNE 2022  
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# ARCHITECTING THE METAVERSE

3<sup>rd</sup> JUNE 2022

by  
**ROHAN BABU A M AND CHAITRA H R**

Rem Koolhaas once said, "Architecture stands with one leg in a world that's 3,000 years old and another leg in the 21st century." This expense is what sets this profession apart. The relevance of knowledge from hundreds of years in the past is a testament to this. In the metaverse, however, these may be obsolete due to the sheer absence of realistic conditions. On the other hand, this in turn provides limitless opportunities in the world of design. Join us as we journey through the infinite possibilities.

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# HIDE AND SEEK (PERFORMATIVE ARCHITECTURE)

2<sup>nd</sup> JUNE 2022

by  
**GAUTHAMA DM**

The goal of this workshop is to broaden students' thinking and open up a world of possibilities in performative envelope interior design through examining the material attributes, mechanics, and climate science.

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# A HYPOTENUSE PATH

1<sup>st</sup> JUNE 2022

by  
**GAUTHAMA DM**

The workshop will focus on the design challenge of designing and detailing the interiors of small spaces under 400 square feet. This entails imagining a variety of uses for the given brief and location before arriving at an interior space planning design. Students will work on TINY dwelling units, emphasizing on innovative space transformation and efficient design.

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# GEOSPATIAL TECHNIQUES IN PRACTICE

4<sup>th</sup> JUNE 2022

by  
**Dr. SIRISHA UPPALURI**

Geospatial techniques play a vital role in every stage of developmental projects. This workshop will help architects in understanding the changing dynamics of natural and man-made resources using GIS and remote sensing techniques. The skills acquired by the trainees will help them to increase the productivity of the projects with quick updation of maps.

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# BIM IN ARCHITECTURE

4<sup>th</sup> JUNE 2022

by  
**Rajkumar Baudh ,Abhishek Katyal**

The workshop will focus on BIM (Building Information Modeling), as well as its future and potential applications in the industry. BIM is a smart 3D model-based approach that gives architects, engineers, and construction (AEC) professionals the knowledge and tools they need to plan, design, construct, and manage buildings and infrastructure more efficiently.

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# AERO-MODELLING

3<sup>rd</sup> JUNE 2022

by  
**SIVARAJ**

Aeromodeling, an exciting and interesting way to learn, apply, and understand science and engineering principles, this workshop involves designing, developing and flying small aircrafts. It integrates various interdisciplinary concepts from streams of science, including architecture. This workshop guarantees fun, learning and acquiring a new hobby or sport.

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# SHIBORI (TIE AND DYE)

3<sup>rd</sup> JUNE 2022

by  
**ORGANIC SYMMETRY**

Shibori is a Japanese tie-dye craft. It involves geometric folding, tying, crumpling, securing and dyeing a piece of fabric. There are innumerable Shibori techniques and the results can be endless. Six basic techniques are curated for the session.

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# ART OF SKETCHING

3<sup>rd</sup> JUNE 2022

by  
**JAIKRISHNA**

Sketching is a skill, with practice anyone can master it. Architects use this skill set effectively to work through problems and communicate their intent.

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# GRIHA WORKSHOP

3<sup>rd</sup> JUNE 2022

by  
**GAGAN KECHIRA**

Environmental pressures of rising demand for resources combined with a fast changing climate are being addressed by policymakers at various levels in order to be sustainable. This workshop aims to improve participants' understanding of green buildings, Griha rating requirements, and the certification procedure. While distributing knowledge on complicated sustainability ideas, we will also learn from his experiences. People, not just buildings, are at the core of sustainable construction.

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# 3D PRINTING - LET'S MAKE

2<sup>nd</sup> JUNE 2022

by  
**RAJNAB SUKDHAKAR**

Let's learn to Make : Design and 3D Print your own models, from Art to Unique Products of your own Design. We'd like for the students leaving this workshop to be able to be able to design a model and make it print (3D Printable) ready.

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# 1 Day workshops at ANC





# UNBOUND ART

by  
**Ar. VIPUL GUPTA**

Pencil Lead Carving is a modern-day example of the intricacy of miniature art and the beauty of detailing. While sculpting the graphite, one can feel the seldom-seen face of the 'tool' itself as a work of art. Holding the pencil, respecting its fragility with a clear and calm mind connects you to the soul of the pencil; before you even begin to sculpt it.

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# WATTLE & DAUB

by  
**MASON INK STUDIO**

This workshop covers aspects such as an introduction to the concepts of earth construction and bridging the gap between theory and realities on a construction site using mud as a medium. Additionally, learning through firsthand experience and hands-on participation along with alternate construction techniques and eco-friendly construction with a special focus on earth as a material is also included. Identification of various soil types in addition to an introduction of hands-on techniques of various types of earthen construction techniques will be explored through this workshop.

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# BUILT TO RESIST QUAKE (LET'S APP IT UP)

by  
**BHUMIKA ARORA AND APPORVA**

Earthquake Resistant Practices in the Built Environment is the focus of the workshop. Participants will learn about the several 3D and 2D forms they can use while designing in seismic zones.

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# ORIGAMI

by  
**Ar. SANTRUPHY DAS**

This hands-on workshop spanning two days begins with learning about the various types of folds and the folding possibilities in origami. Following this, an installation will be designed and executed on a real scale.

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# PLATE LITHOGRAPHY

by  
**Mr. MARK MATHEW**

The workshop will introduce students to the techniques of aluminium plate lithography. Over the course of the two day workshop students will learn how to design, process their image and take multiple impressions of their plate.

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# ATELIER (ON BRICKS)

by  
**Mr. GOUTAM G NAMADAR**

As we go ahead in life, there are many problems that we face. And to solve this problem we have to work intelligently, which will reduce one's stress and strain. With digitalization taking over the world, a practical problem may become quite a tussle to understand by the pupil. It is an approach to motivate students to expose themselves to a more practical learning. And with this practical approach, students can get a better understanding of the issues on-site, and how it can be solved and executed with the best construction techniques.

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# THE ART OF WORDSMITHERY : A WRITING STUDIO

by  
**Ar. SHREYA DUBEY**

This comprehensive writing workshop will teach you all you need to know about creative writing, from the basics to effectively branding yourself and your work with the right words. Various writing prompts, exercises, an introduction to architectural writing, pin up presentations, and everything in between will be covered during the session. This is a once-in-a-lifetime opportunity to learn from a distinguished writer.

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# PHOTOGRAPHY WORKSHOP : FROM BASICS TO ADVANCED

by  
**AR. HAWIN PRINTO C**

Learn the fundamentals of photography: principles and elements, camera equipment, and manual mode of camera operation in this session. Familiarize oneself with the commercial aspect of photography.

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# BAMBOO JOINERY

by  
**URAVU ECOLINKS**

Bamboo, a natural, versatile and sustainable construction material, is one of the best eco-friendly alternative to current materials. We, at Uravu Ecolinks, are committed to three principles: eco-friendliness, community involvement and innovative design. Building with Bamboo is a workshop to enhance an individual's knowledge of bamboo, break misconceptions and encourage the increased use of this green steel. This is an opportunity for sustainability enthusiasts to familiarise themselves with this natural material and improve their construction skill through hands-on experience.

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# CURVE FOLDING ARCHITECTURE

by  
**GAVINI SHARATH KUMAR**

A curved fold on any malleable or flimsy material drastically alters its stiffness. Various curve folding techniques have been established at a miniature architecture scale. At this workshop, the aim is to develop a semi open architectural model with curve folding techniques.

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# CHAR-KOTEN ART

by  
**VRANDA AGARWAL**

Charcoal is one of the most abstract mediums created. It flows with the movement of your hand, you can easily shape or use it to sketch on paper. This medium can also be used to express feelings and art, and through this workshop, students will be able to do the same.

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# 2 Day workshops at ANC







## 3 Day workshops at ANC

More than 60 Workshops were arranged at the ANC . Our students participated in few of them on different days.



# ■ Keynote Speakers at ANC

**ARCHITECT  
SANJAY MOHE**  
FOUNDER AND PARTNER OF MINDSPACE  
ARCHITECTS



**KEYNOTE  
SPEAKER**

1<sup>st</sup> - 4<sup>th</sup>  
JUNE  
2022  
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**ARCHITECT  
DEAN D'CRUZ**  
CO-FOUNDER OF MOZAIC



**KEYNOTE  
SPEAKER**

1<sup>st</sup> - 4<sup>th</sup>  
JUNE  
2022  
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**ARCHITECT  
B V DOSHI**  
AWARDEE of the 2022 RIBA ROYAL GOLD  
MEDAL for ARCHITECTURE



**KEYNOTE  
SPEAKER**

1<sup>st</sup> - 4<sup>th</sup>  
JUNE  
2022  
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**ARCHITECT  
NAMITH VARMA**  
CO-FOUNDER OF GAYATHRI AND NAMITH  
ARCHITECTS



**KEYNOTE  
SPEAKER**

1<sup>st</sup> - 4<sup>th</sup>  
JUNE  
2022  
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**MASTER CLASS**  
by  
**Dr. BENNY KURIAKOSE**  
BENNY KURIAKOSE AND ASSOCIATES



1<sup>st</sup> - 4<sup>th</sup>  
JUNE  
2022  
2561  
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BENGALURU

64<sup>th</sup> YEAR  
ANNUAL  
NASA  
CONVENTION  
2022



**MASTER CLASS**  
by  
**Ar. TONY JOSEPH**  
PRINCIPAL ARCHITECT AT STAPATI




1<sup>st</sup> - 4<sup>th</sup>  
JUNE  
2022  
2561  
SCHOOL OF ARCHITECTURE  
CHRIST (DEEMED TO BE UNIVERSITY)  
BENGALURU

64<sup>th</sup> YEAR  
ANNUAL  
NASA  
CONVENTION  
2022



**MASTER CLASS**  
by  
**Ar.V. VISHWANATH**  
CO-FOUNDER AND  
PRINCIPAL ARCHITECT OF  
VV ARCHITECTS



1<sup>st</sup> - 4<sup>th</sup>  
JUNE  
2022  
2561  
SCHOOL OF ARCHITECTURE  
CHRIST (DEEMED TO BE UNIVERSITY)  
BENGALURU

64<sup>th</sup> YEAR  
ANNUAL  
NASA  
CONVENTION  
2022



**MASTER CLASS**  
by  
**Ar.BIJAY RAMACHANDRAN**  
PARTNER AT HUNDREDDHANDS




1<sup>st</sup> - 4<sup>th</sup>  
JUNE  
2022  
2561  
SCHOOL OF ARCHITECTURE  
CHRIST (DEEMED TO BE UNIVERSITY)  
BENGALURU

64<sup>th</sup> YEAR  
ANNUAL  
NASA  
CONVENTION  
2022



**MASTER CLASS**  
by  
**PADMASHREE  
AR. G SHANKAR**  
FOUNDER OF HABITAT  
TECHNOLOGY GROUP



1<sup>st</sup> - 4<sup>th</sup>  
JUNE  
2022  
2561  
SCHOOL OF ARCHITECTURE  
CHRIST (DEEMED TO BE UNIVERSITY)  
BENGALURU

64<sup>th</sup> YEAR  
ANNUAL  
NASA  
CONVENTION  
2022



**MASTER CLASS**  
by  
**Ar. GITA BALAKRISHNAN**  
FOUNDER OF ETHOS



1<sup>st</sup> - 4<sup>th</sup>  
JUNE  
2022  
2561  
SCHOOL OF ARCHITECTURE  
CHRIST (DEEMED TO BE UNIVERSITY)  
BENGALURU

64<sup>th</sup> YEAR  
ANNUAL  
NASA  
CONVENTION  
2022



**MASTER CLASS**  
by  
**Ar. LEENA KUMAR**  
JT. HON. SECRETARY at IIA  
PRINCIPAL ARCHITECT AT  
KUMAR CONSULTANTS



1<sup>st</sup> - 4<sup>th</sup>  
JUNE  
2022  
2561  
SCHOOL OF ARCHITECTURE  
CHRIST (DEEMED TO BE UNIVERSITY)  
BENGALURU

64<sup>th</sup> YEAR  
ANNUAL  
NASA  
CONVENTION  
2022



**MASTER CLASS**  
by  
**Ar. VIJAY NARNAPATTI**  
PRINCIPAL ARCHITECT AT  
MAYA PRAXIS



1<sup>st</sup> - 4<sup>th</sup>  
JUNE  
2022  
2561  
SCHOOL OF ARCHITECTURE  
CHRIST (DEEMED TO BE UNIVERSITY)  
BENGALURU

64<sup>th</sup> YEAR  
ANNUAL  
NASA  
CONVENTION  
2022



**MASTER CLASS**  
by  
**Mr. PANKAJ DHARKAR**  
PRESIDENT AND FOUNDER OF  
PANKAJ DHARKAR AND ASSOCIATES



1<sup>st</sup> - 4<sup>th</sup>  
JUNE  
2022  
2561  
SCHOOL OF ARCHITECTURE  
CHRIST (DEEMED TO BE UNIVERSITY)  
BENGALURU

64<sup>th</sup> YEAR  
ANNUAL  
NASA  
CONVENTION  
2022



**MASTER CLASS**  
by  
**Ar. RAJESH SHIVRAM**  
PRINCIPAL ARCHITECT AT  
TECHNOARCHITECTURE



1<sup>st</sup> - 4<sup>th</sup>  
JUNE  
2022  
2561  
SCHOOL OF ARCHITECTURE  
CHRIST (DEEMED TO BE UNIVERSITY)  
BENGALURU

64<sup>th</sup> YEAR  
ANNUAL  
NASA  
CONVENTION  
2022



# Masterclasses at ANC





# ■ On the Spot Event at ANC







64<sup>th</sup> ANC Team At Christ  
University, Kengeri, Bangalore



# ▪ NASA Unit Council of 65<sup>th</sup> Year

- UNIT SECRETARY :  
Rutuja Patil

- UNIT DESIGNEE :  
Kirti Bodgire

- TREASURERS :  
Aditya Gavali  
Aditya Todkar

- PUBLIC  
RELATIONS  
HEAD : Yash  
Pawar

- PUBLIC  
RELATIONS  
ASSOCIATE :  
Savali Jadhav

