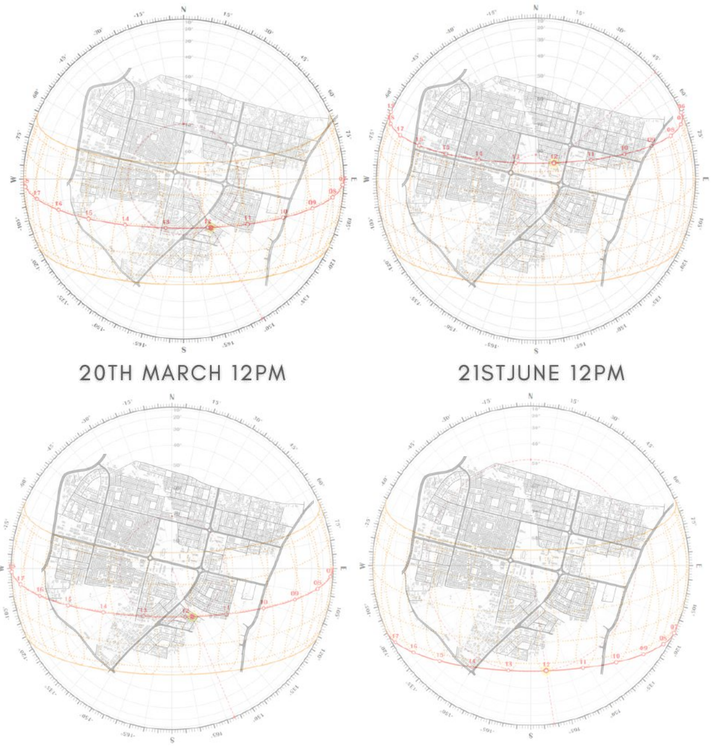
SOLAR ANALYSIS SUN PATH



20TH MARCH 12PM | 21STJUNE 12PM | 22ND SEPTEMBER 12PM | 21ST DECEMBER 12PM

SOLAR ANALYSIS:

MARCH, RADIATIONS ARE OBSERVED ON THE EAST AND SOUTHEAST SIDES.
ROOFTOP RADIATIONS ARE HIGH DURING THE SUMMER MONTHS AND DECREASE BY 30% DURING WINTER

SOLAR ANALYSIS RADIATION ANALYSIS

MONTHS	N	NE	E	SE	S	SW	W	NW	ROOF
MAR	105.8	428	646	608	388	441	474	471	909
JUN	303.4	548.5	571	297.6	49	275.2	464	481	906.4
DEC	69	134	503	624	556	527	385	306	641

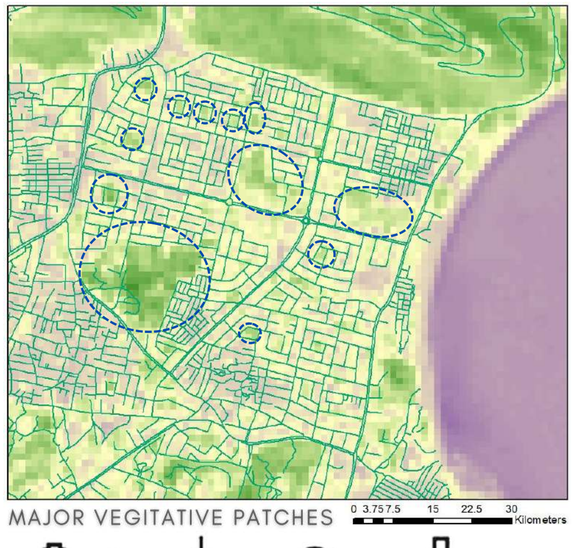
SOLAR(ROOFTOP) POWER HARVESTING POTENTIAL:

E= A*H*PR*R
TOTAL ROOF AREA = 84342 M2
30% OF ROOF AREA = 25,302 M2
TOTAL POWER POTENTIAL DURING MARCH = 265KW/DAY.
TOTAL POWER POTENTIAL DURING DECEMBER =187.24 KW/DAY.

INFERENCES & RECOMMENDATIONS:

- SOLAR ENERGY CAN BE HARNESSED ON THE BUILDINGS ROOFTOP, ESPECIALLY FOR COMMERCIAL AND MEDIUM-RISES.
- THE STREET LIGHTS CAN BE RETROFITTED WITH SOLAR PANELS.
- DESIGN RECOMMENDATIONS FOR REDUCING INDOOR HEAT GAIN CAN BE SPECIFIED

UNITS:W/HR/SQM

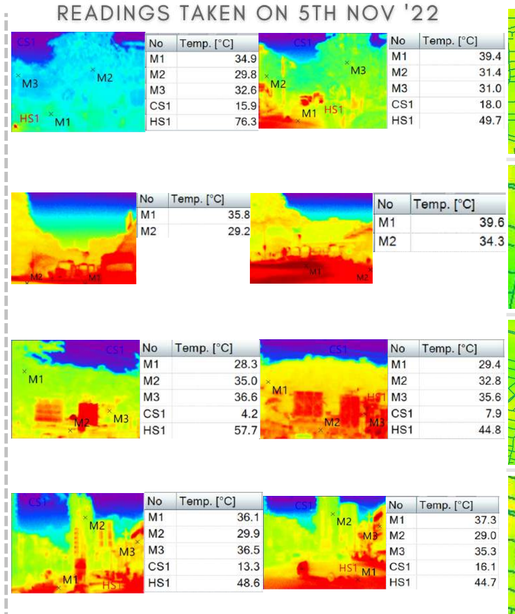


MAJOR VEGITATIVE PATCHES

NORMALIZED DIFFERENCE VEGETATION INDEX (NDVI)

NDVI VALUES RANGE FROM +1.0 TO -1.0. AREAS OF BARREN ROCK, SAND, OR SNOW USUALLY SHOW VERY LOW NDVI VALUES (FOR EX:, 0.1 OR LESS). SPARSE VEGETATION SUCH AS SHRUBS AND GRASSLANDS OR SENESCING CROPS MAY RESULT IN MODERATE NDVI VALUES (≈ 0.2 TO 0.5).

READINGS TAKEN ON 5TH NOV '22



No	Temp. [°C]
M1	34.9
M2	29.8
M3	32.6
CS1	15.9
HS1	76.3

No	Temp. [°C]
M1	39.4
M2	31.4
M3	31.0
CS1	18.0
HS1	49.7

No	Temp. [°C]
M1	35.8
M2	29.2

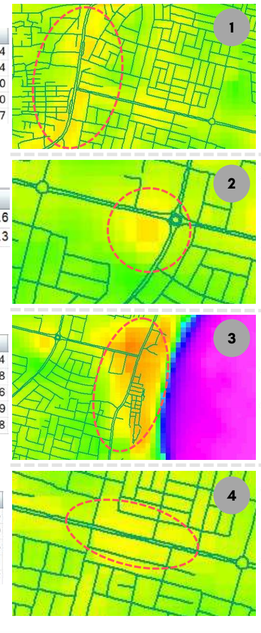
No	Temp. [°C]
M1	39.6
M2	34.3

No	Temp. [°C]
M1	28.3
M2	35.0
M3	36.6
CS1	4.2
HS1	57.7

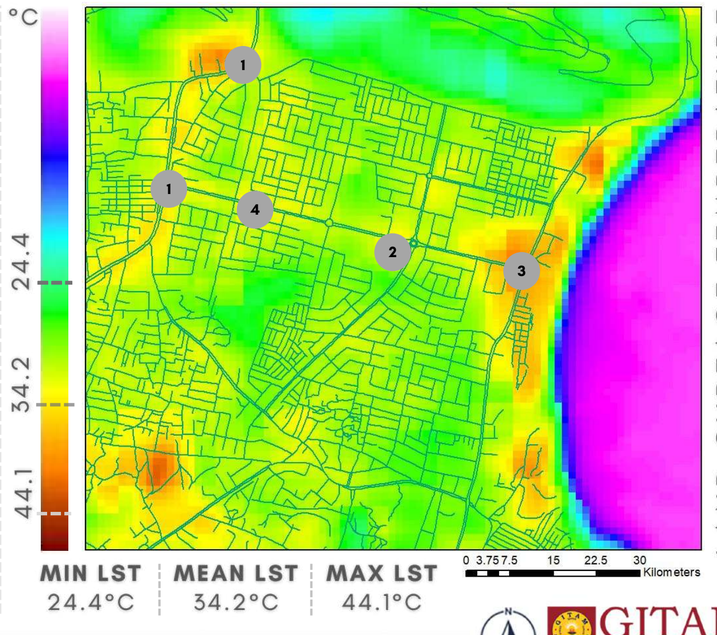
No	Temp. [°C]
M1	29.4
M2	32.8
M3	35.6
CS1	7.9
HS1	44.8

No	Temp. [°C]
M1	36.1
M2	29.9
M3	36.5
CS1	13.3
HS1	48.6

No	Temp. [°C]
M1	37.3
M2	29.0
M3	35.3
CS1	16.1
HS1	44.7



1. NH16 (AH45) STRETCH, HAS HEAVY VECHICULAR ACTIVITY AND HAS NO VEGITATIVE COVER.
2. ALWARDAS GROUNDS PREVIOUSLY BARREN, AND NOW AN INDOOR STADIUM IS COMING UP.
3. DR.NTR BEACH ROAD, HAS HEAVY VECHICULAR ACTIVITY AND HAS NO VEGITATIVE COVER.
4. MVP DOUBLE ROAD STRETCH, HAS HEAVY VECHICULAR ACTIVITY AND HAS NO VEGITATIVE COVER.

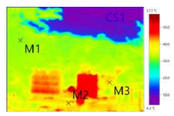
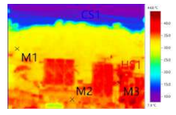
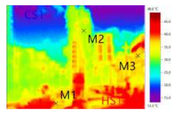
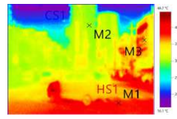
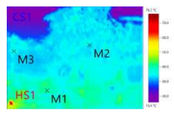
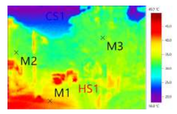
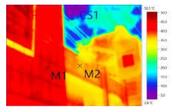
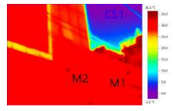
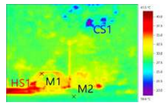
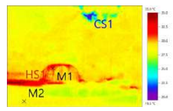
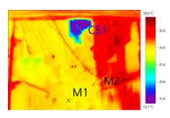
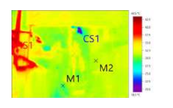
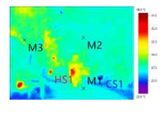
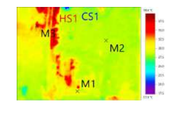
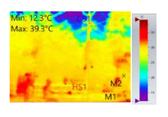
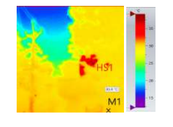
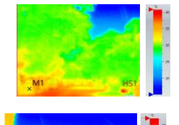
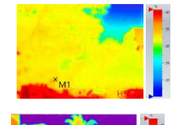
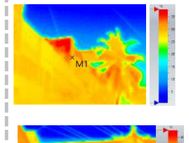
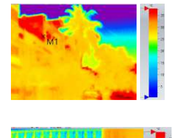
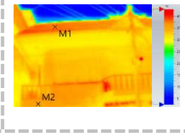
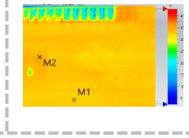


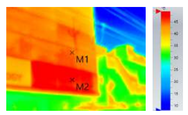
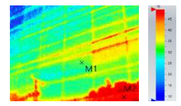
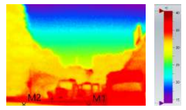
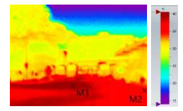
MIN LST	MEAN LST	MAX LST
24.4°C	34.2°C	44.1°C

GITAM (DEEMED TO BE UNIVERSITY)
VISAKHAPATNAM • HYDERABAD • BENGALURU

SOLAR ANALYSIS

THERMAL IMAGERY

S.NO	LOCATION	9-10AM READING		2-3PM READING	
1			No / Temp. [°C] M1 28.3 M2 35.0 M3 36.6 CS1 4.2 HS1 57.7		No / Temp. [°C] M1 29.4 M2 32.8 M3 35.6 CS1 7.9 HS1 44.8
2			No / Temp. [°C] M1 36.1 M2 29.9 M3 36.5 CS1 13.3 HS1 48.6		No / Temp. [°C] M1 37.3 M2 29.0 M3 35.3 CS1 16.1 HS1 44.7
3			No / Temp. [°C] M1 34.9 M2 29.8 M3 32.6 CS1 15.9 HS1 76.3		No / Temp. [°C] M1 39.4 M2 31.4 M3 31.0 CS1 18.0 HS1 49.7
4			No / Temp. [°C] M1 44.2 M2 33.2 CS1 2.8 HS1 50.5		No / Temp. [°C] M1 29.7 M2 27.8 CS1 -2.2 HS1 36.3
5			No / Temp. [°C] M1 34.2 M2 27.2 CS1 18.6 HS1 41.5		No / Temp. [°C] M1 30.8 M2 28.4 CS1 19.5 HS1 35.0
6			No / Temp. [°C] M1 27.9 M2 33.6 CS1 13.7 HS1 39.0		No / Temp. [°C] M1 27.4 M2 30.6 CS1 19.1 HS1 43.5
7			No / Temp. [°C] M1 26.9 M2 27.0 M3 27.6 CS1 22.6 HS1 38.0		No / Temp. [°C] M1 28.5 M2 27.9 M3 35.2 CS1 17.3 HS1 39.6
8			No / Temp. [°C] M1 31.7 M2 28.6 CS1 12.3 HS1 39.3		No / Temp. [°C] M1 32.4 HS1 47.4
9			No / Temp. [°C] M1 32.1 HS1 40.9		No / Temp. [°C] M1 32.8 HS1 47.0
10			No / Temp. [°C] M1 27.8		No / Temp. [°C] M1 32.1
11			No / Temp. [°C] M1 36.4 M2 33.5		No / Temp. [°C] M1 28.8 M2 30.6

S.NO	LOCATION	9-10AM READING		2-3PM READING	
12			No / Temp. [°C] M1 43.0 M2 46.8		No / Temp. [°C] M1 28.6 M2 31.0
13			No / Temp. [°C] M1 35.8 M2 29.2		No / Temp. [°C] M1 39.6 M2 34.3
14			No / Temp. [°C] M1 34.5 M2 27.4		No / Temp. [°C] M1 34.4 M2 29.1
15			No / Temp. [°C] M1 28.7 M2 31.5		No / Temp. [°C] M1 27. M2 35.
16			No / Temp. [°C Emiss. / Refl.Temp] M1 44.1 0.93 27.0 M2 39.6 0.93 27.0 M3 30.4 0.93 27.0 M4 38.8 0.93 27.0 M5 29.8 0.93 27.0 M6 39.6 0.93 27.0 CS1 2.7 0.93 27.0 HS1 48.2 0.93 27.0		No / Temp. [°C Emiss. / Refl.Temp] M1 30.1 0.93 27.0 M2 28.6 0.93 27.0 M3 32.0 0.93 27.0 M4 34.0 0.93 27.0 M5 29.8 0.93 27.0 M6 32.6 0.93 27.0 M7 31.5 0.93 27.0 M8 30.2 0.93 27.0 CS1 6.0 0.93 27.0 HS1 41.0 0.93 27.0
17			No / Temp. [°C Emiss. / Refl.Temp] M1 28.1 0.93 27.0 M2 28.2 0.93 27.0 M3 32.3 0.93 27.0 M4 29.4 0.93 27.0 M5 27.4 0.93 27.0 CS1 12.9 0.93 27.0 HS1 51.5 0.93 27.0		No / Temp. [°C Emiss. / Refl.Temp] M1 28.9 0.93 27.0 M2 29.5 0.93 27.0 M3 29.1 0.93 27.0 M4 31.9 0.93 27.0 M5 30.9 0.93 27.0 M6 32.2 0.93 27.0 M7 31.7 0.93 27.0 M8 36.4 0.93 27.0 CS1 13.9 0.93 27.0 HS1 55.7 0.93 27.0
18			No / Temp. [°C Emiss. / Refl.Temp] M1 30.0 0.93 27.0 M2 39.8 0.93 27.0 M3 36.8 0.93 27.0 M4 33.9 0.93 27.0 M5 44.6 0.93 27.0 M6 33.8 0.93 27.0 M7 33.2 0.93 27.0 M8 31.9 0.93 27.0 CS1 14.2 0.93 27.0 HS1 54.6 0.93 27.0		No / Temp. [°C Emiss. / Refl.Temp] M1 33.5 0.93 27.0 M2 33.4 0.93 27.0 M3 31.7 0.93 27.0 M4 39.1 0.93 27.0 M5 38.2 0.93 27.0 M6 39.8 0.93 27.0 M7 32.3 0.93 27.0 M8 39.7 0.93 27.0 CS1 14.3 0.93 27.0 HS1 43.4 0.93 27.0
19			No / Temp. [°C Emiss. / Refl.Temp] M1 27.5 0.93 27.0 M2 25.9 0.93 27.0 M3 27.3 0.93 27.0 M4 35.3 0.93 27.0 M5 28.5 0.93 27.0 M6 27.1 0.93 27.0 M7 28.2 0.93 27.0 M8 29.3 0.93 27.0 CS1 5.5 0.93 27.0		No / Temp. [°C Emiss. / Refl.Temp] M1 30.7 0.93 27.0 M2 28.4 0.93 27.0 M3 30.8 0.93 27.0 M4 28.3 0.93 27.0 M5 31.1 0.93 27.0 M6 30.4 0.93 27.0 M7 32.6 0.93 27.0 M8 30.5 0.93 27.0 CS1 8.9 0.93 27.0 HS1 37.4 0.93 27.0
20			No / Temp. [°C Emiss. / Refl.Temp] M1 28.4 0.93 27.0 M2 29.3 0.93 27.0 M3 29.5 0.93 27.0 M4 37.2 0.93 27.0 M5 28.2 0.93 27.0 CS1 15.3 0.93 27.0 HS1 40.3 0.93 27.0		No / Temp. [°C Emiss. / Refl.Temp] M1 28.3 0.93 27.0 M2 34.9 0.93 27.0 M3 31.7 0.93 27.0 M4 35.8 0.93 27.0 M5 30.7 0.93 27.0 CS1 13.5 0.93 27.0 HS1 55.4 0.93 27.0
21			No / Temp. [°C Emiss. / Refl.Temp] M1 38.8 0.93 27.0 M2 43.2 0.93 27.0 M3 34.8 0.93 27.0 M4 30.7 0.93 27.0 M5 35.0 0.93 27.0 M6 49.4 0.93 27.0 M7 38.6 0.93 27.0 CS1 30.2 0.93 27.0 HS1 50.4 0.93 27.0		No / Temp. [°C Emiss. / Refl.Temp] M1 30.9 0.93 27.0 M2 34.8 0.93 27.0 M3 32.4 0.93 27.0 M4 31.6 0.93 27.0 M5 36.8 0.93 27.0 M6 33.1 0.93 27.0 M7 30.8 0.93 27.0 M8 30.6 0.93 27.0 M9 34.5 0.93 27.0 CS1 23.4 0.93 27.0 HS1 40.3 0.93 27.0
22			No / Temp. [°C Emiss. / Refl.Temp] M1 26.1 0.93 27.0 M2 28.3 0.93 27.0 M3 29.0 0.93 27.0 M4 41.5 0.93 27.0 CS1 13.1 0.93 27.0 HS1 57.7 0.93 27.0		No / Temp. [°C Emiss. / Refl.Temp] M1 25.5 0.93 27.0 M2 33.2 0.93 27.0 M3 28.0 0.93 27.0 M4 32.8 0.93 27.0 M5 29.7 0.93 27.0 M6 32.6 0.93 27.0 M7 31.6 0.93 27.0 M8 29.8 0.93 27.0 CS1 33.2 0.93 27.0 HS1 41.3 0.93 27.0

LAND SURFACE TEMPERATURE HOTSPOTS

THERMAL IMAGERY CAPTURE POINTS

MIN LST	MEAN LST	MAX LST
24.4°C	34.2°C	44.1°C

INFERENCES:

- AVG 6°C VARIATION FOR SHADED AND NON-SHADED STREETS DURING 9-10 AM.
- 8°C-15°C VARIATIONS FOR SHADED AND NON-SHADED STREETS DURING 2-3 PM.
- 5°C INCREASE IN TEMP. ON THE BRICK WALL FROM 9AM - 3PM - NORTH FACING.
- 9°C DECREASE IN TEMP. ON THE TERRACOTTA SLOPING ROOF FROM 9AM -3PM - EAST FACING.
- 12-15°C DECREASE IN TEMP. ON GLASS FACADES FROM 9AM -3PM - EAST FACING
- AVG 15°C DECREASE IN TEMP. ON ACP FACADE FROM 9AM -3PM - EAST FACING
- OTHER FACTORS DURING THERMAL IMAGING: EMISSIVITY-0.93, REFLECTIVE TEMP-27°C, INTENSITY-500 W/M2. HUMIDITY - 50% RH & DEW POINT 9.3 °

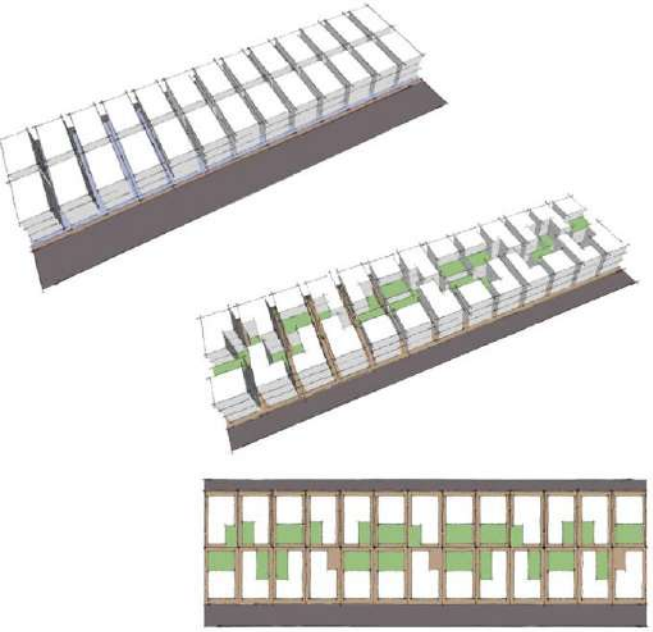
U FACTOR CALCULATION FOR EXISTING MATERIAL PALETTE

S.NO	COMPONENT	BENCHMARK (U-FACTOR: W./M2.K)	COMPOSITION	U-FACTOR
1	WALLS-TYPE1	0.40	23CMS BRICK+ PLASTERING	3 W/M2.K
2	WALLS-TYPE2	0.40	GLASS CURTAIN WALLS	4.3 W/M2.K
3	WALLS-TYPE3	0.40	STRCTURAL FRAME+ACP PANELS	5 W/M2.K
4	WALLS-TYPE4	0.40	AAC BLOCKS + PLASTERING	0.9 W/M2.K

RECOMMENDATIONS:

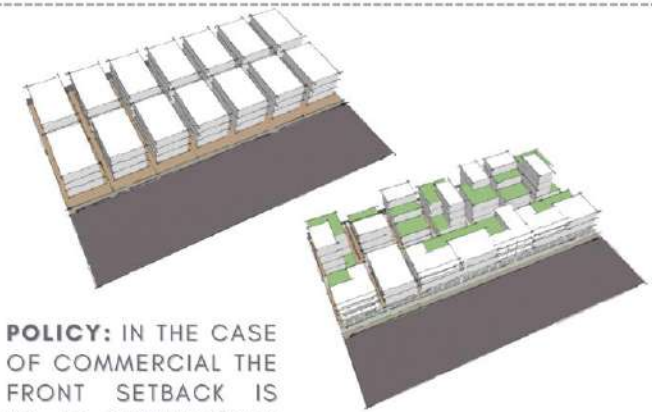
- NEW CONSTRUCTIONS CAN OPT FOR LOW U-VALUE MATERIALS TO REDUCE INTERNAL HEAT GAIN
- VEGETATION AND SHADING DEVICES CAN BE USED TO REDUCED SURFACE LEVEL TEMP.
- GLASS AS EXTERNAL FACADE MATERIAL SHOULD BE AVOIDED FOR HIGH RADIATION SIDES (E-SE & W)

LIG PLOTS

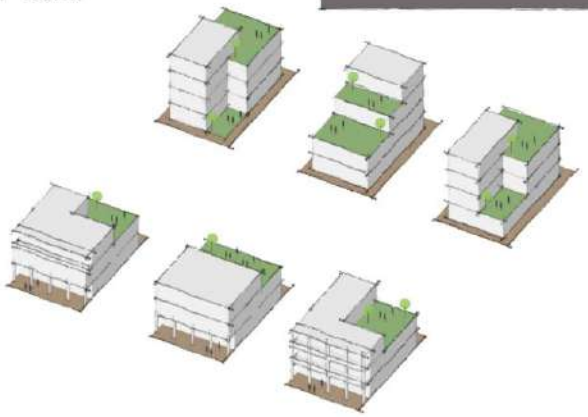


POLICY: ALL PLOTS SHALL LEAVE OPEN TO-SKY SPACE EQUAL TO 8% OF PLOT AREA, ON THE GROUND FLOOR AND MULTIPLE ON SUBSIQUIENT FLOORS.

MIG PLOTS



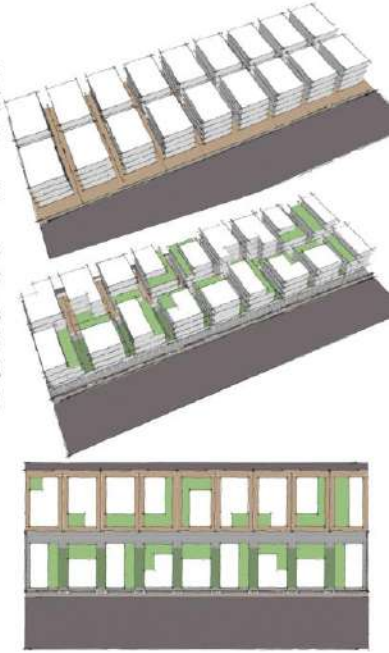
POLICY: IN THE CASE OF COMMERCIAL THE FRONT SETBACK IS TO BE TRANSFERRED TO THE BACK & LEAVING A SEMI-PUBLIC SPACE OF 1.5M AS A COLONNADE AFTER THE FRONT SETBACK OF 1.5M.

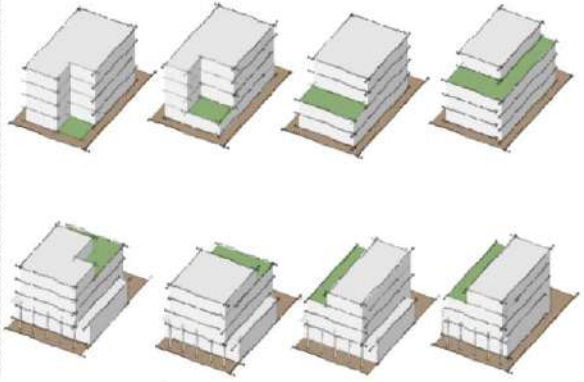


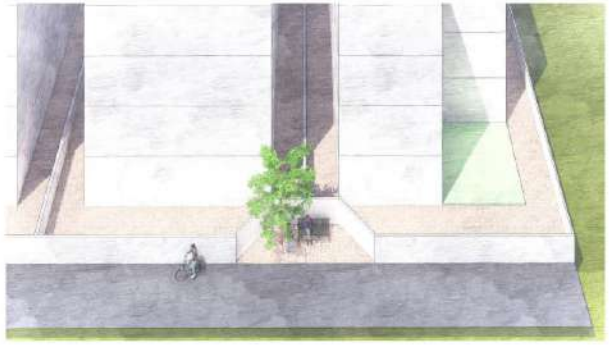
POLICY: THE SIDE SETBACK FOR THE COMMERCIAL CAN BE ELIMINATED IF EQUAL AREA OF OPEN SPACE IS PROVIDED ON SUBSEQUENT FLOORS.

HIG PLOTS

POLICY: THE SIDE SETBACK FOR THE COMMERCIAL CAN BE ELIMINATED ON GROUND FLOOR IF EQUAL AREA OF OPEN SPACE IS PROVIDED ON SUBSEQUENT FLOORS.







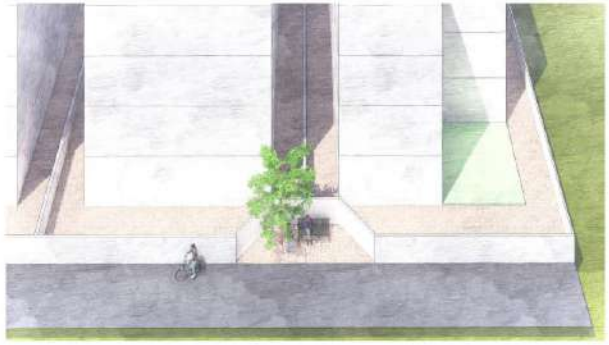
POLICY:

MIG AND HIG RESIDENTIAL PLOTS LEAVING 2M OR MORE SETBACKS CAN RECESS THE COMPOUND WALL TO CREATE PUBLIC INTERACTION SPACE ALONG INTERNAL ROADS. THEY SHALL BE AWARDED 1.5 TIMES THE RECESSED AREA TO BUILD ABOVE THE PERMISSIBLE HEIGHT LIMIT.

POLICY:

EVERY COMMERCIAL BUILDING SHALL HAVE A MINIMUM COLONNADE OF 1.5M WIDE AFTER A FRONT SETBACK OF 1.5M.

NO ENCROACHMENT SHALL BE PERMITTED IN THE SETBACK AREA OR NON-SET-BACK AREA OF THE COLONNADE SPACE.



POLICY:

MIG AND HIG RESIDENTIAL PLOTS LEAVING 2M OR MORE SETBACKS CAN RECESS THE COMPOUND WALL TO CREATE PUBLIC INTERACTION SPACE ALONG INTERNAL ROADS. THEY SHALL BE AWARDED 1.5 TIMES THE RECESSED AREA TO BUILD ABOVE THE PERMISSIBLE HEIGHT LIMIT.

POLICY:

EVERY COMMERCIAL BUILDING SHALL HAVE A MINIMUM COLONNADE OF 1.5M WIDE AFTER A FRONT SETBACK OF 1.5M.

NO ENCROACHMENT SHALL BE PERMITTED IN THE SETBACK AREA OR NON-SET-BACK AREA OF THE COLONNADE SPACE.

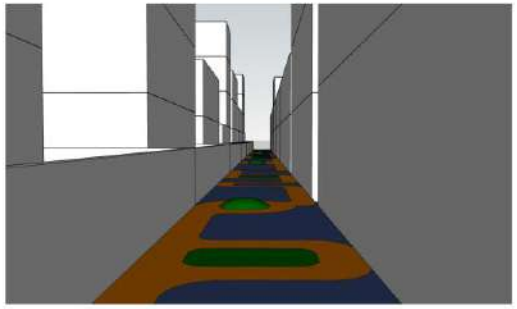
SENSORY VARIABILITY

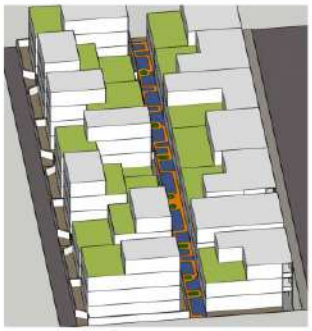
INTRODUCTION

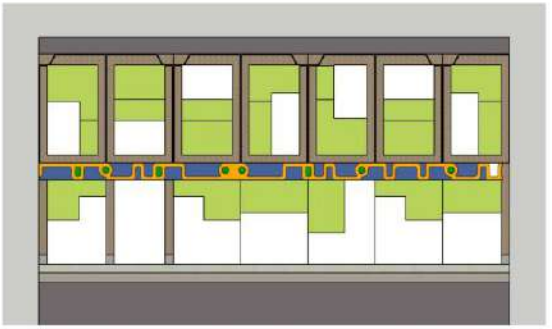
- The built environment is the ever-present background to human life. Be it consciously or subconsciously, we live our day to day lives constantly interacting with buildings, structures and the 'spaces-in-between'. This built environment influences our experience of places, determining its success or failure.
- For a place to be successful it requires users to consciously connect to it, have a pleasant time and enjoy being there so that they continue to inhabit it. For this to occur, their experience of the place must be informed by a meaningful connection to it. This connection can be realised through the human body's sensory receptors (i.e.: perception).
- When senses are stimulated by an environment, the brain registers a perception of that environment and stores that perception as a mental image that can be recalled as some type of sensorial experience.
- One of the main principles of city planning and urban design today is to design for the pedestrian, that is, to design spaces where the pedestrian's senses are positively stimulated whilst they carry out their activities. By enabling people to carry out their activities in enjoyable and pleasant ways, public spaces remain populated and the goal in urban design is achieved - to create lively and pedestrianized cities.

PEDESTRIAN ENVIRONMENTS

- To get people in the streets - to make the city lively - people needed to feel safe and stimulated enough to use them.







PUBLIC SPACE NETWORKING

PARK: BADAM PARK (VUDA)
COORDINATES: 17°44'22.4"N 83°20'00.4"E
MVP **SECTOR**: 5
AREA: 1375 SQM (0.34ACS)

BADAM PARK PILOT PROJECT

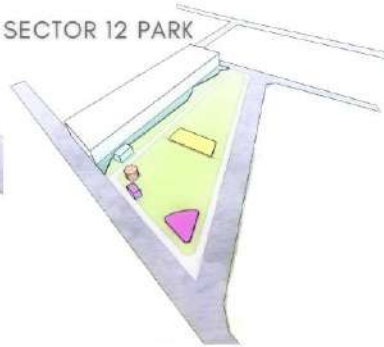
POLICY: REVITALIZATION NETWORK ARTICULATION, PROXIMITY SERVICES, AND QUALITY OF PUBLIC SPACE DESIGN.

1. SIGNAGES FOR DIRECTIONS AND DESIGNATION OF PATHS & TRACKS.
2. COMMUNAL CYCLE SHARING/RENTALS TO PROMOTE NMT & LAST-MILE CONNECTIVITY & 2 WHEELER EV CHARGING STATION.
3. EV CHARGING STATIONS IN ADJACENCY OF STREETS LEVEL PARKING TO PROMOTE THE USE OF EV.
4. STAGE FOR SOCIAL AND CULTURAL EVENTS AND ASSOCIATIONS TO ENCOURAGE INTERACTIONS, AND SENSORY AND CULTURAL ACCEPTS.
5. DESIGNATED CYCLE TRACKS TO PROVIDE SAFE & RAPID NMT.
6. E-TOLITELS AT PUBLIC SPACES TO PROMOTE SANITATION, HEALTH & WELL-BEING.
7. VENDOR STALLS TO PROVIDE REFRESHMENTS AND ACT AS LOCAL MAGNETS FOR OUTDOOR INTERACTIONS AND ECONOMIC GENERATORS
8. DIAGONAL TRACKS AND PATHS TO DECREASE TRAVEL DISTANCE AND ENTRY INTO THE PARK FOR HALTS OR SHORTCUTS.
9. PLAY & GYM EQUIPMENT FOR ALL AGE PHYSICAL ACTIVITY & INTERACTIONS.

PARKS & COMMUNITY SPACES

PUBLIC SPACE NETWORK OF MULTI-SCALE CENTRALITIES

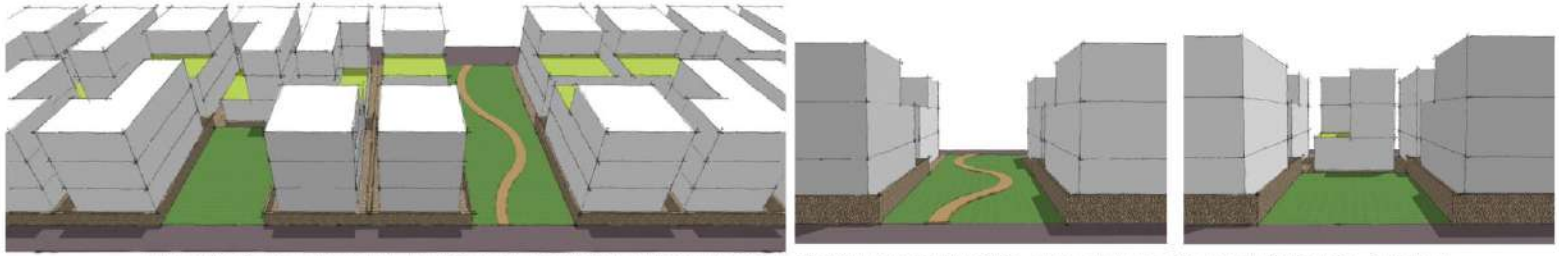
PUBLIC SPACE NETWORKING



- STAGES & PLATFORMS
- PLAY AREAS & GYM EQUIPMENT
- E-TOILETS
- VENDOR STALLS
- CYCLE STANDS & EV CHARGING STATIONS

POLICIES:

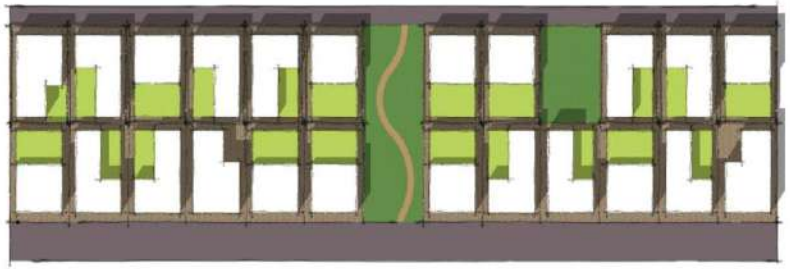
- PROMOTE THE TRANSITION BETWEEN MAJOR ACCESSES AND THE LOCAL DYNAMICS OF PUBLIC SPACES (PROXIMITY AND DIVERSIFIED URBAN FUNCTIONS)
- EVOLVE THE CONNECTIONS AND INTERACTIONS MORE THAN JUST A PHYSICAL CONNECTION, BUT ALSO LINKED WITH THE SERVICE PROVIDED BY THESE PUBLIC SPACES (FUNCTIONS, ACTIVITIES, IDENTITY)
- ALLOWS THE CONNECTION/TRANSITION WITH THE LOCAL PUBLIC SPACE NETWORK, THEY CAN ASSURE GOOD WALKABILITY AND BIKE-ABILITY CONDITIONS, IN ARTICULATION WITH PUBLIC TRANSPORT
- ENABLES THE EMERGENCE OF NEW URBAN FUNCTIONS, CAPABLE OF GENERATING PUBLIC SPACE DYNAMICS AND APPROPRIATION, PROMOTING INTERACTION WITH THE LOCAL URBAN AGGLOMERATIONS.



UTILIZATION OF VACANT LANDS FOR NETWORK ARTICULATION, PROXIMITY SERVICES, AND QUALITY OF PUBLIC SPACE DESIGN.

IDENTIFED AS MULTI SCALE CENTRALITIES:

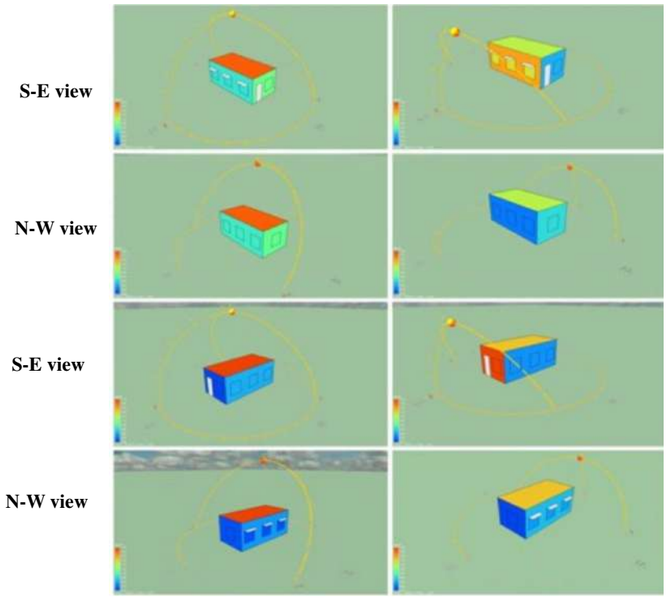
- COMMERCIAL AREA (SHOPPING CENTRE)
- TRANSPORT INTERFACE
- HOSPITAL
- SCHOOLS/INTITUTES
- PARKS
- COMMUNITY AREAS



POLICIES:

- PROMOTE VACANT LANDS TO HOUSE LUSH VEGETATION TO HELP MITIGATE UHI AND MODIFY THE MICROCLIMATE.
- EVOLVE VACANT LANDS TO BE BRIDGING CORRIDORS TO INCREASE WALKABILITY & BIKE-ABILITY.
- PROMOTE VACANT LANDS TO HOST WEEKLY MARKETS FOR SOCIAL, ECONOMIC AND HEALTHY WELL BEING
- PROMOTE VACANT LANDS TO HOST CULTURAL EVENTS WITH THE CONSENT OF THE OWNER OR STAKEHOLDERS
- EVOLVE VACANT LANDS TO BECOME POSITIVE PUBLIC AREAS.

CHANDU TANIKONDA

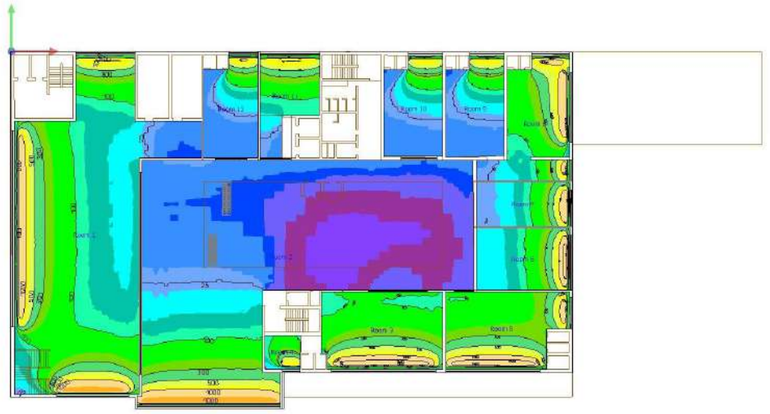


Analysis of the effect of orientation on heating of building by solar radiation

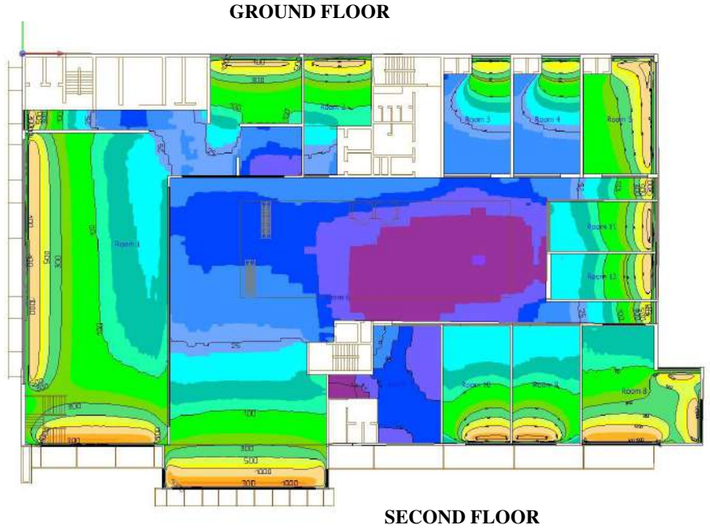
longer side oriented in N-W Direction

	Faces	Energy gain (kbt/sft)	Area of surface	Total energy
21-DEC	TOP	2.16	450	1044
	EAST	0.8	360	288
	WEST	0.95	360	401.6
	NORTH	0.38	180	68.2
	SOUTH	3.12	180	540
				2341.8
21-JUN	TOP	2.78	450	1602
	EAST	1.69	360	640.8
	WEST	1.6	360	576
	NORTH	1.27	180	241.6
	SOUTH	1.12	180	222.8
				3282.4

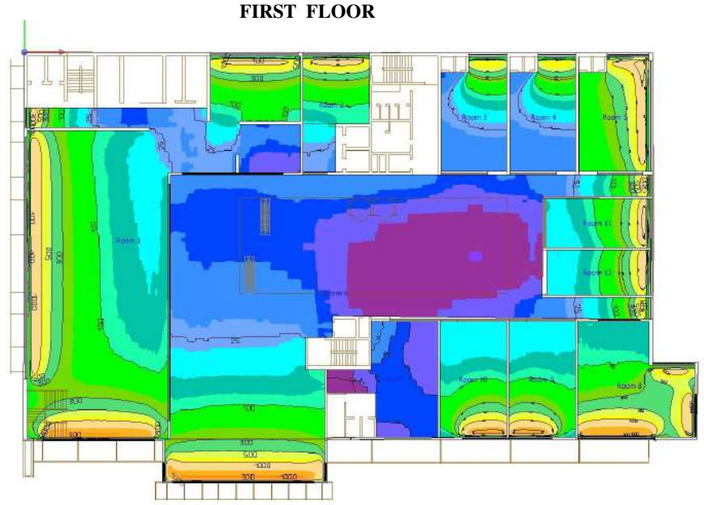
GROUND FLOOR



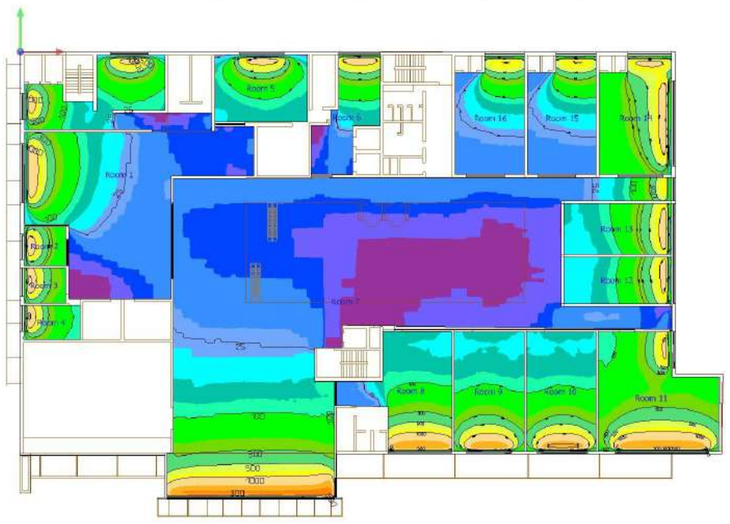
FIRST FLOOR



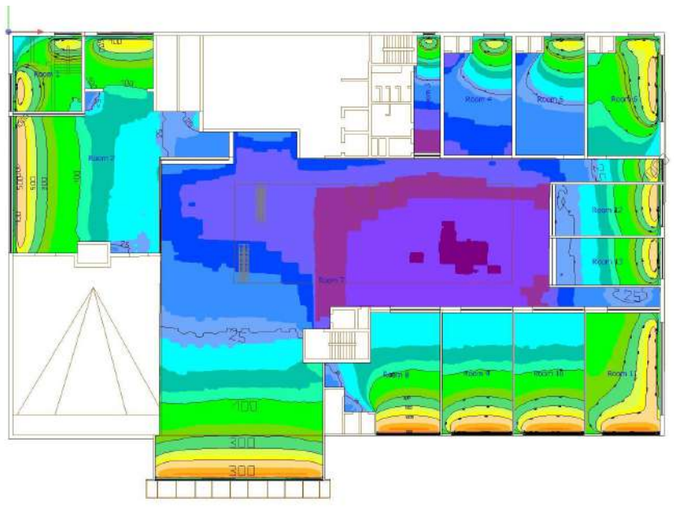
SECOND FLOOR



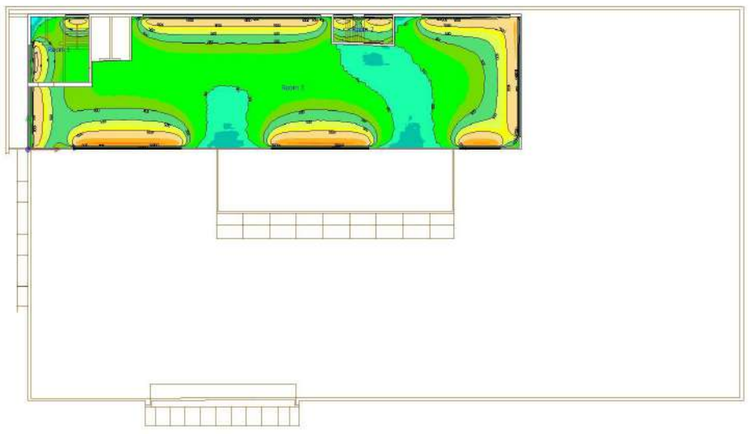
THIRD FLOOR



FOURTH FLOOR



FIFTH FLOOR



SIXTH FLOOR

GITAM
(DEEMED TO BE UNIVERSITY)
(Estd.u/s 3 of the UGC Act, 1956)

DAY LIGHT ANALYSIS THROUGH ATRIUM FOR A COMMERCIAL BUILDING

GUIDE – AR.SHANMUKA TEJA

SIGNATURE

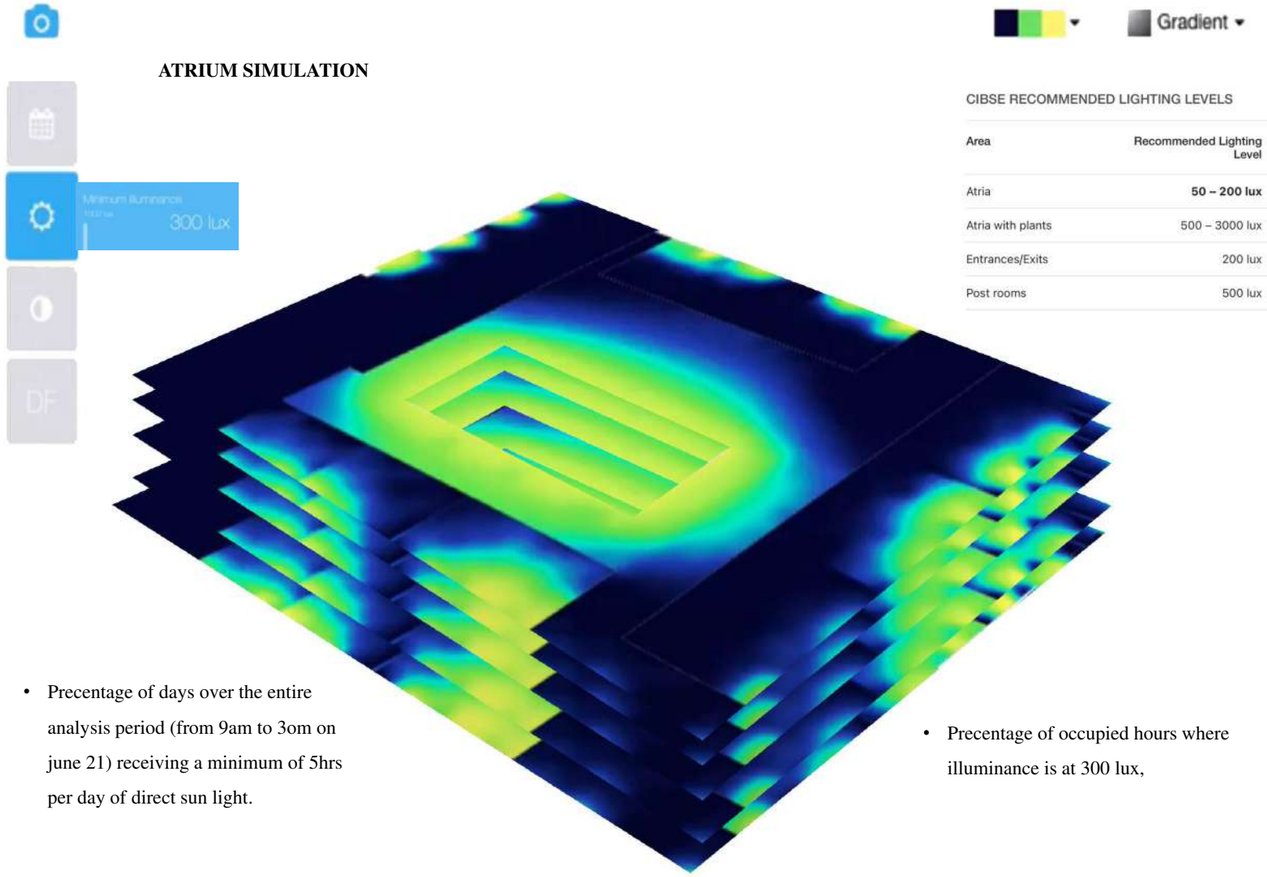
SIMULATIONS&CALCULATIONS

CHANDU TANIKONDA

VP21ARCH01000016

4th SEMESTER

ATRIUM SIMULATION



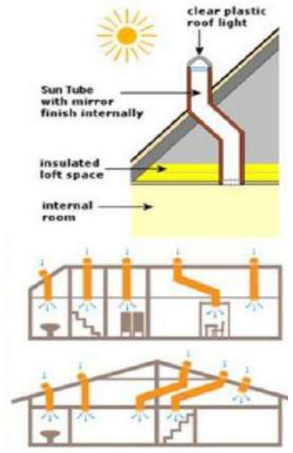
CIBSE RECOMMENDED LIGHTING LEVELS

Area	Recommended Lighting Level
Atria	**50 – 200 lux**
Atria with plants	500 – 3000 lux
Entrances/Exits	200 lux
Post rooms	500 lux

- Precentage of days over the entire analysis period (from 9am to 3om on june 21) receiving a minimum of 5hrs per day of direct sun light.

- Precentage of occupied hours where illuminance is at 300 lux,

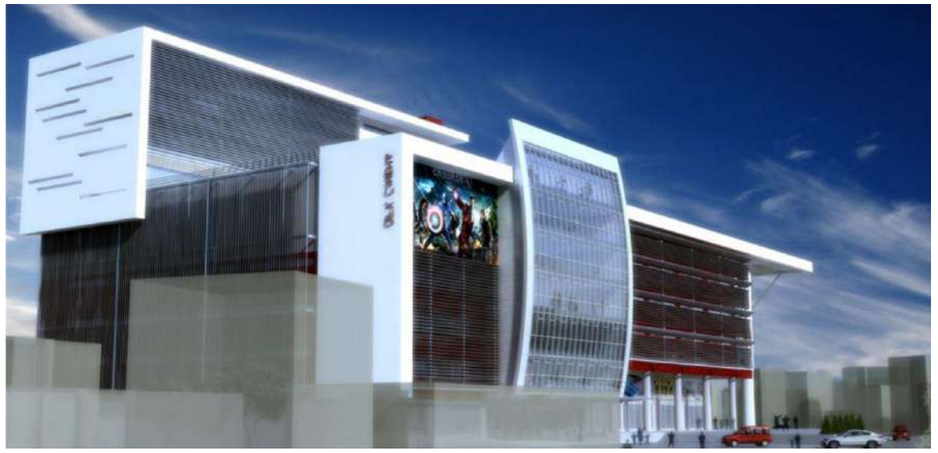
HYBRID SOLAR LIGHTING (ARTIFICAL + NATURAL LIGHT



HYBRID SOLAR LIGHTING

Hybrid solar lighting uses a parabolic mirror to collect the sunlight. The system then filters out the heat – causing UV light, and pipes the remaining natural light into interior spaces via fiber cable optic lines, Maximum of 20M length possible. One unit delivers 50,000 lumens (Roughly equivalent to amount of light needed to illuminate 1000square feet).

VIEW FROM MAIN ROAD



VIEW - 2

VIEW - 3

GITAM (DEEMED TO BE UNIVERSITY) (Estd.u/s 3 of the UGC Act, 1956)

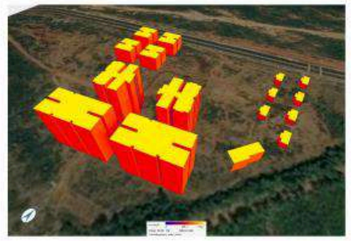
DAY LIGHT ANALYSIS THROUGH ATRIUM FOR A COMMERCIAL BUILDING

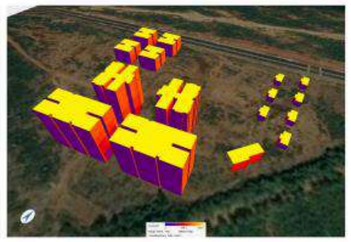
VIEWS

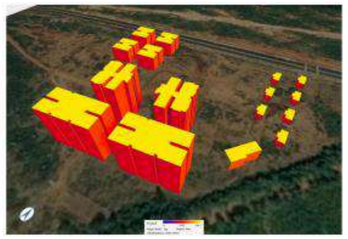
GUIDE – AR.SHANMUKA TEJA

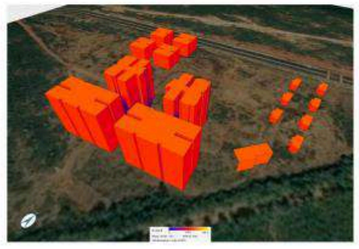
SIGNATURE

OPTION 1 FOR SOLAR RADIATION SIMULATION

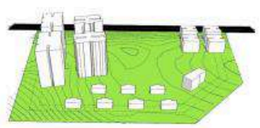


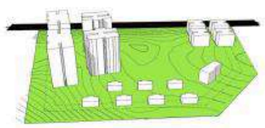


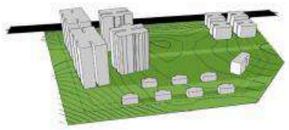




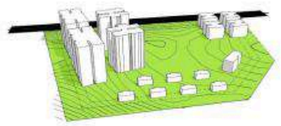
SHADOW ANALYSIS

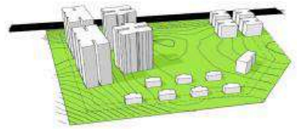


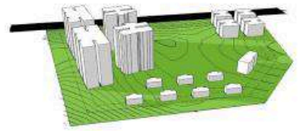




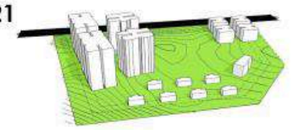
MARCH 21

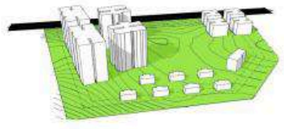


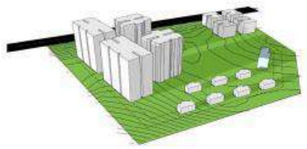




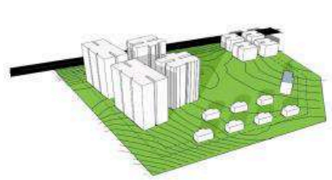
JUNE 21

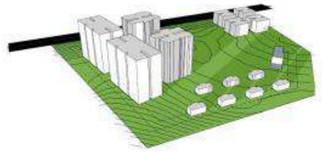




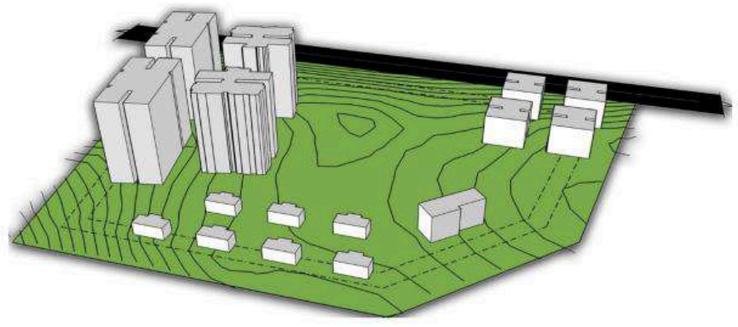


SEPTEMBER 21

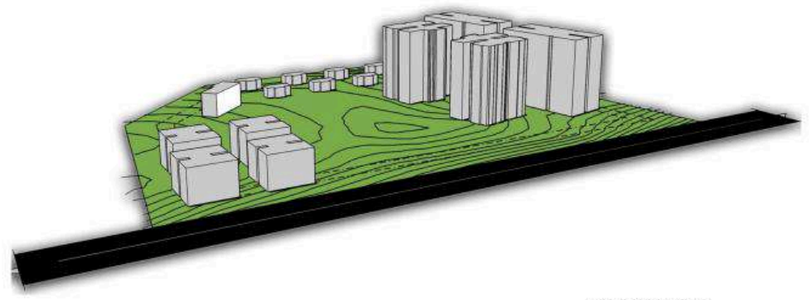




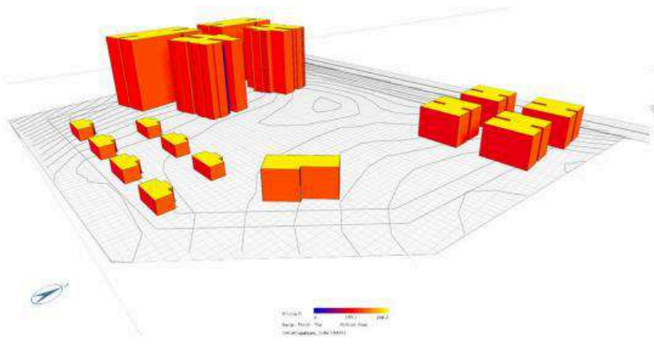
DECEMBER 21

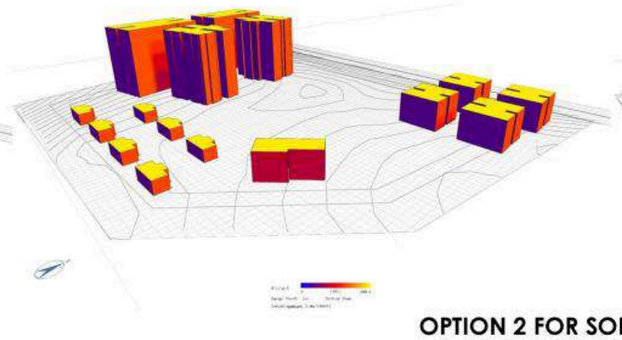


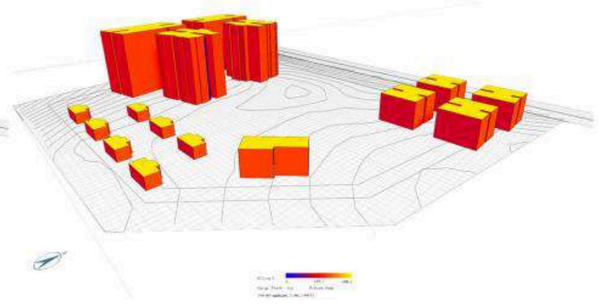
OPTION 2 SHADOW ANALYSIS

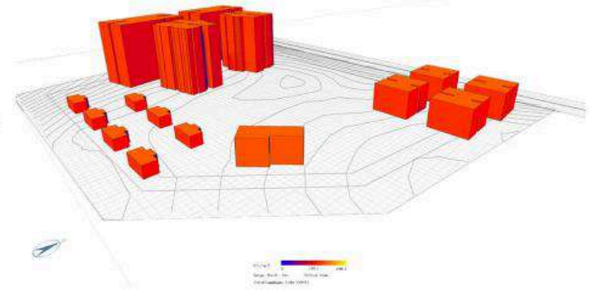


SITE MODEL



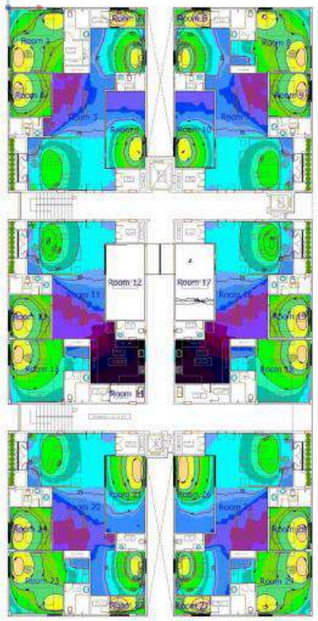




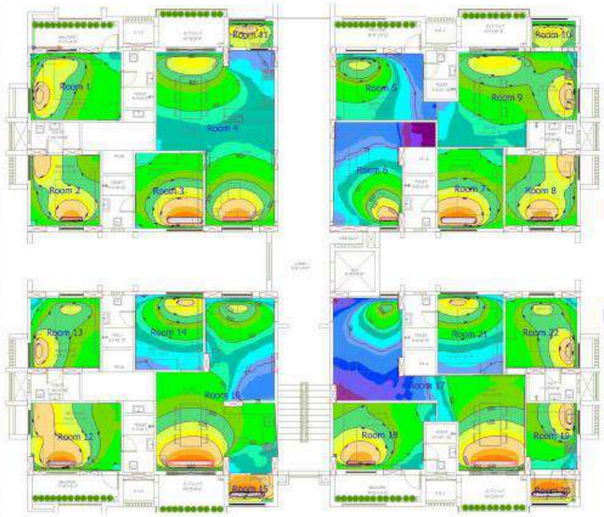


OPTION 2 FOR SOLAR RADIATION SIMULATION

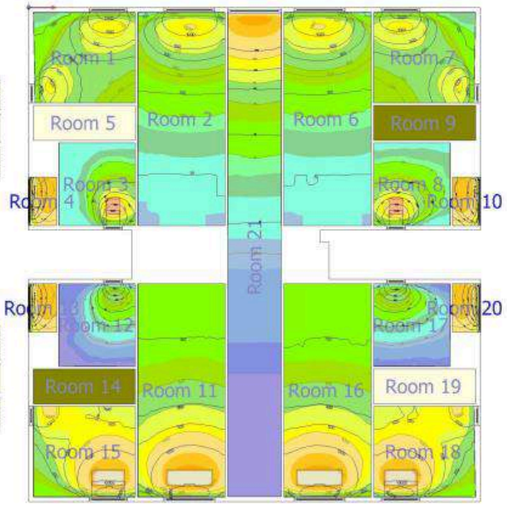
DAY LIGHTING



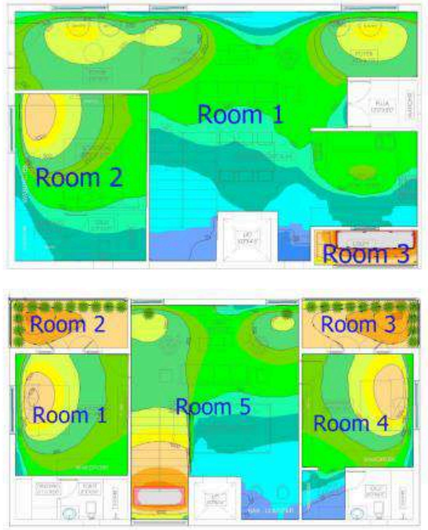
2BHK



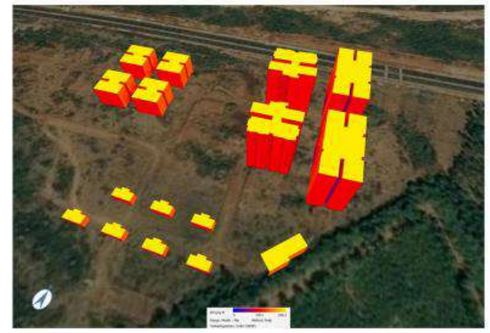
3BHK

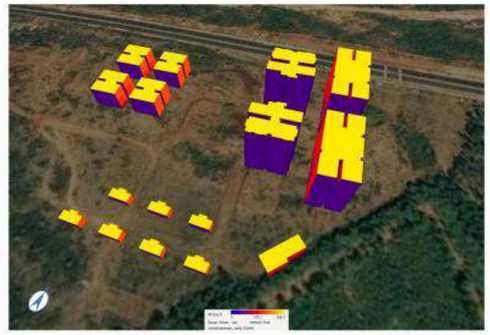


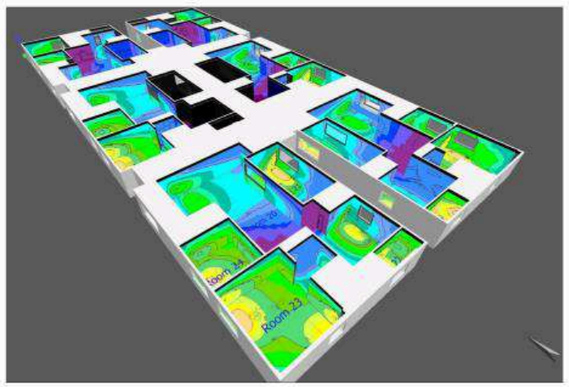
EWS



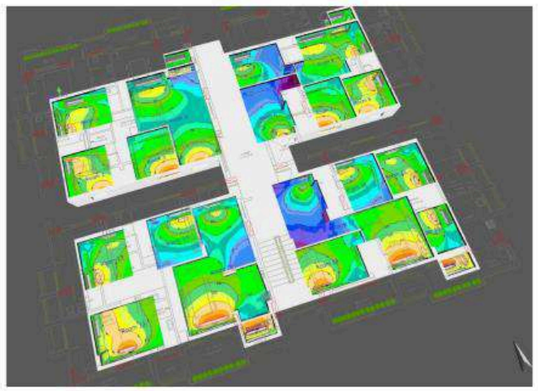
VILLAS



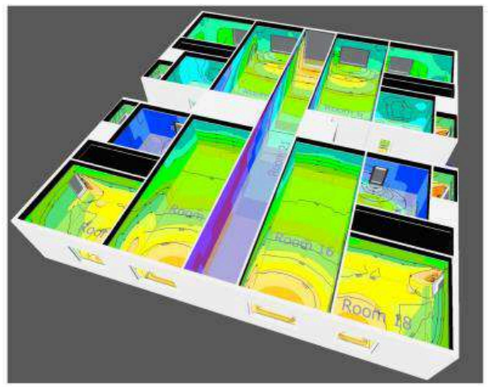




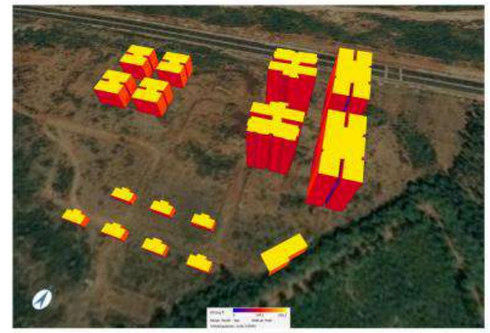
A)



B)

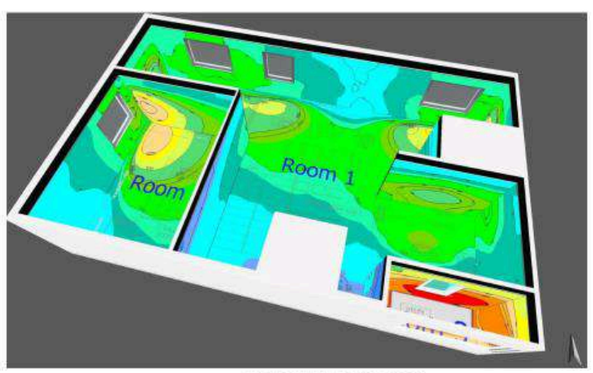


C)



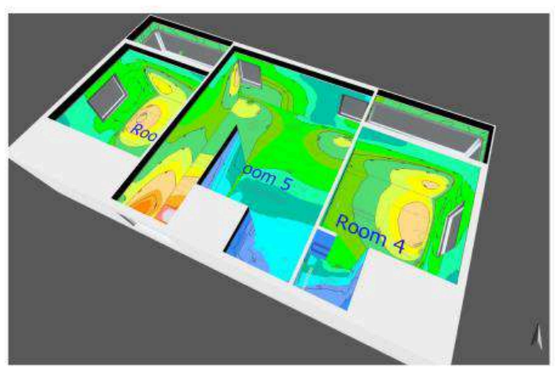
DAY LIGHTING ON WALL SURFACES

A) 2BHK
B) 3BHK
C) EWS
D) VILLAS



GROUND FLOOR

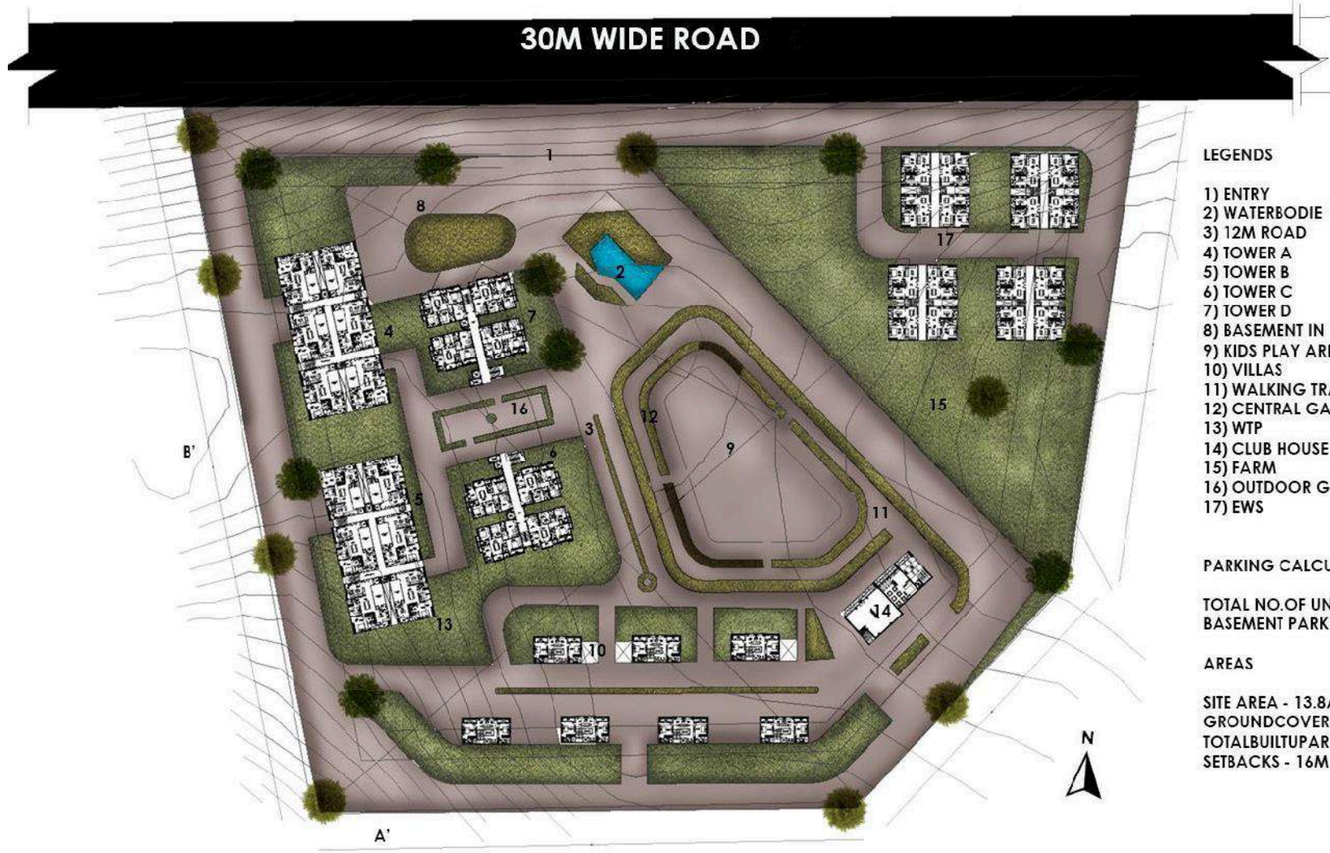
D)



FIRST FLOOR

OPTION 3 FOR SOLAR RADIATION SIMULATION

CONCEPT AND SITE PLAN



LEGENDS

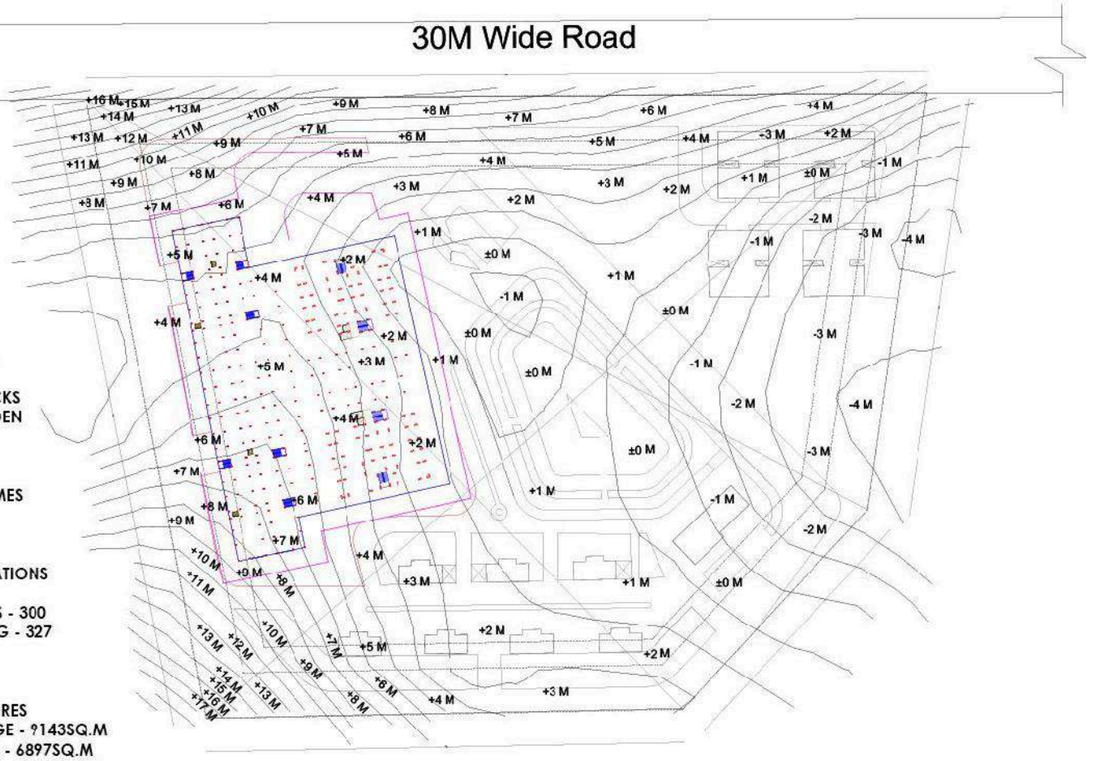
1) ENTRY
2) WATERBODIE
3) 12M ROAD
4) TOWER A
5) TOWER B
6) TOWER C
7) TOWER D
8) BASEMENT IN
9) KIDS PLAY AREA
10) VILLAS
11) WALKING TRACKS
12) CENTRAL GARDEN
13) WTP
14) CLUB HOUSE
15) FARM
16) OUTDOOR GAMES
17) EWS

PARKING CALCULATIONS

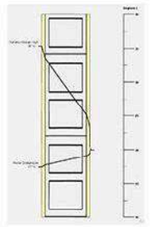
TOTAL NO.OF UNITS - 300
BASEMENT PARKING - 327

AREAS

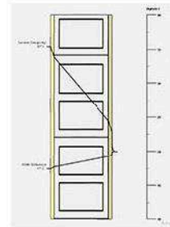
SITE AREA - 13.8ACRES
GROUNDCOVERAGE - ?143SQ.M
TOTALBUILTUPAREA - 6897SQ.M
SETBACKS - 16M



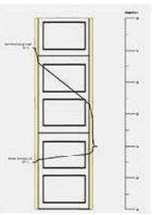
MATERIAL OPTION FOR RESIDENTIAL (HIGH-RISE)



LW CONCRETE BLOCK
150MM R VALUE-0.57
U VALUE-2.25



LW CONCRETE BLOCK
200MM R VALUE-0.67
U VALUE-1.49



CONCRETE BLOCK
200MM R VALUE-0.44
U VALUE-2.25

WE ARE TAKING THE LW CONCRETE BLOCK AS A WALL MATERIALIT HAS THE U-VALUE-1.49 AND R-VALUE-0.67 20MM CAN BE CONSIDERED AS APPROPRIATED WALL THICKNESS FOR THE RESIDENCE TOWERS

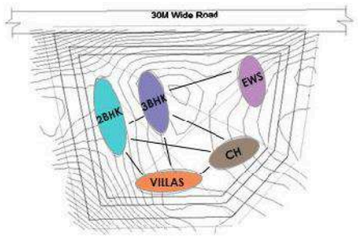
DESIGN STUDIO II - SUSTAINABLE GATED COMMUNITY
(AAR 322)

CHANDU TANIKONDA		VP21ARCH0100016
COMMON AREA AND SERVICES - 10 % OF SITE AREA (AP BY LAWS)	5583.49	10%
PARKING REQUIREMENT - 20% OF BUILT UP AREA (AP BY LAWS)	7792	20%
AMENITIES 5 % OF SITE AREA	2791.74	5%

TYPOLOGY

TOWER	AREA /UNIT	NO. OF UNITS	TOTAL AREAS	% OF NO. OF UNITS
1 BHK	80	80	6400	26 %
TOWER A (2 BHK)	120	90	10800	26 %
TOWER B (2BHK)	120	90		
TOWER C (3 BHK)	160	60		
TOWER D (3 BHK)	160	60	9600	26 %
VILLAS				
3 BHK	200	7	1400	2 %
		387	28200	
EWS & LIG				
EWS	25	43	1075	10.0 %
LIG	50	43	2150	10.0 %
PARKING			5640	20 %
			8865	
TOTAL NUMBER OF UNITS		473		
TOTAL BUILT UP AREA		37065		66.3832 %
Occupants		2129		

SITE AREA	55834.87	SQM
COVERAGE 35%	19542.20	SQM
SET BACK 16M	41772.00	SQM
10%OPEN AREA	5583.49	SQM
AMENITIES 5%	2791.74	SQM

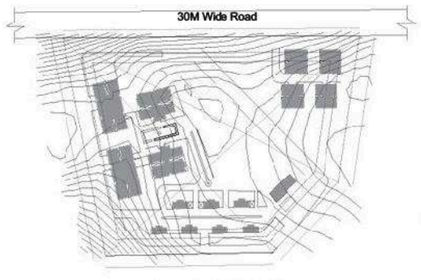


ZONING

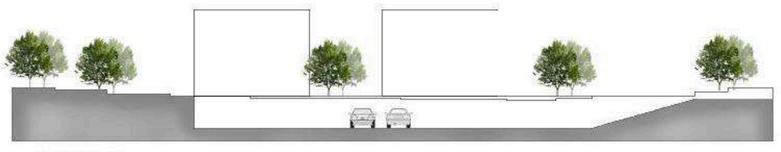
LANDSCAPING

SUSTAINABILITY ASPECTS
PUBLIC OPEN SPACE
ADAPTIVE RE-USE
WATER SAVINGS
INFILTRATION

SUSTAINABLE FEATURES
SOLAR PANELS
NATIVE SPECIES
ORGANIC WASTE
NATIVE VEGETATION
MORE GREEN SPACES
RAINWATER HARVESTING
SHADEDSPACES
WASTE SEGREGATION

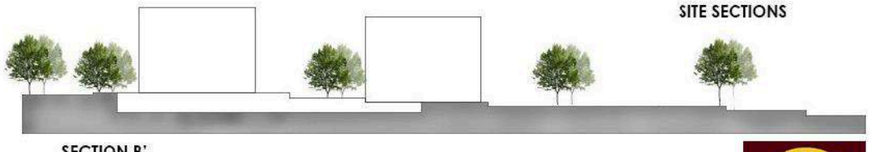


BLOCKS LAYOUT



SECTION A'

SITE SECTIONS



SECTION B'