

# portfolio

sector 12



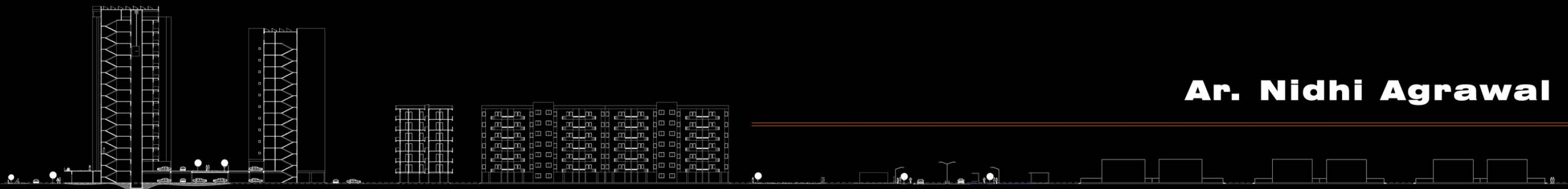
guest house



craft village



engg.college



**Ar. Nidhi Agrawal**

I dedicate this folio to my parents, my dearest friends, my employees and all those who have been my guiding light through the years.....

## Curriculum Vitae

**NAME** : NIDHI AGRAWAL

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BHAWNA NAGAR, SHANKAR NAGAR, RAIPUR (C.G.)

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**EDUCATION** : SSC – CGBSE - 82.5%  
: HSC – CGBSE - 76.6%  
: BACHELOR OF ARCHITECTURE – NIT RAIPUR – 68.19%

**PROFESSIONAL AFFLIATION** : REGISTERED ARCHITECT, COUNCIL OF ARCHITECTURE

**WORK EXPERIENCE** : ASSOCIATE ARCHITECT AT BAGRECHA & ASSOCIATES – JUNE 2011 TO MAY 2012  
: ASSOCIATE ARCHITECT AT ASN+A – JUNE 2012 TO TILL DATE

**COMPUTER LITERACY** : AUTOCAD, MS OFFICE

**ABOUT ME** : I AM A HARDWORKING INDIVIDUAL KEEN TO BE PART OF YOUR ESTEEMED ORGANIZATION. I AM QUICK LEARNER, HAVE GOOD ORGANIZATIONAL SKILLS. I HAVE BEEN HANDLING ALL ASPECTS OF A PROJECT INDIVIDUALLY, WELL VERSED IN CURRENT RULES AND REGULATIONS OF LOCAL BODIES.



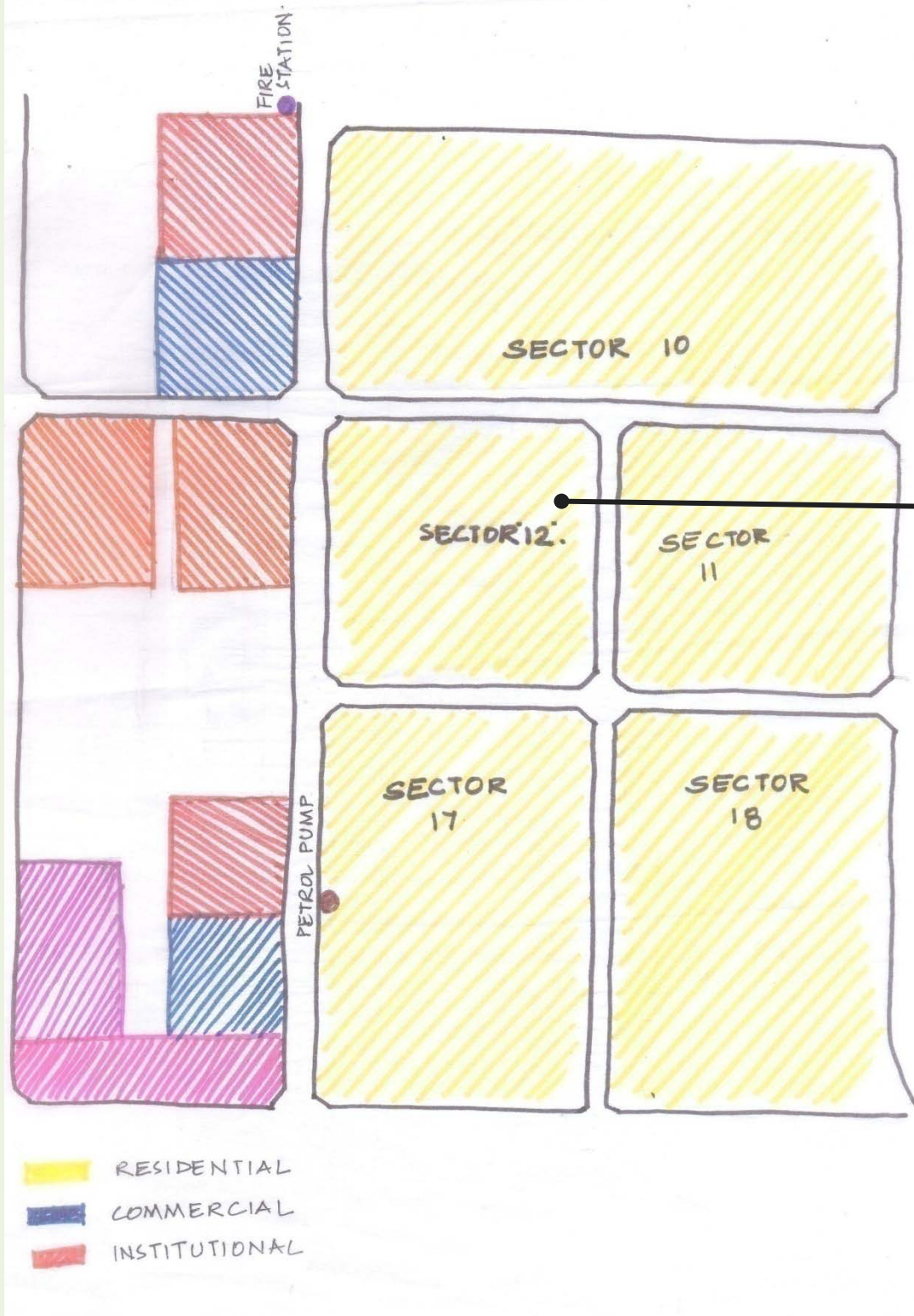
*Self satisfaction in work is the key to one's greatest motivation.*

## ***SOME OF THE PROJECTS.....***

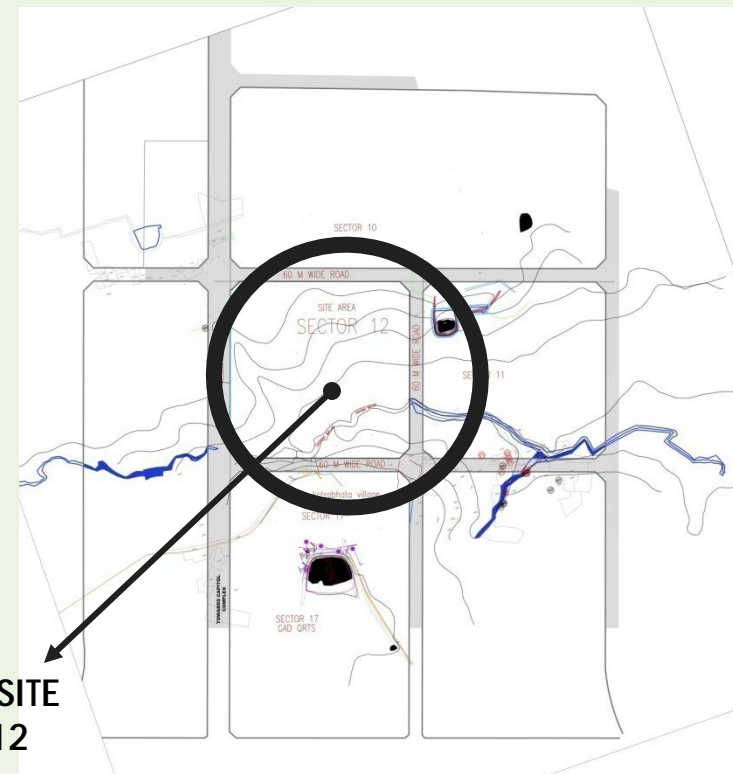
- Proposed Housing Scheme For CGHB At Sector 12, Naya Raipur (C.G.)
- Designing Of Models Of Rural Toilets In Chhattisgarh
- Designing Of Models Of Water Supply And Sanitation Facilities At Govt Health Centers In Chhattisgarh
- Proposed Housing Scheme "Atal Vihar Yojna" For CGHB
- Proposed Engineering College At Nowgong, Chhattarpur Bhopal (M.P.)
- Proposed State Guest House At Bhopal (M.P.)
- Proposed Craft Village At Kondagaon (C.G.)
- Proposed Art And Cultural Center At Motibagh, Raipur (C.G.)
- Proposed Ayush And Health Science University Of Chhattisgarh At Naya Raipur (C.G.)
- Proposed Girls Hostel For Pt.R.S.S.U. At Raipur (C.G.)



# PROPOSED HOUSING SCHEME FOR CGHB AT SECTOR 12, NAYA RAIPUR, CHHATTISGARH



AREA OF THE SITE : 6,46,598.6 SQM (64 Ha)



SURVEY PLAN



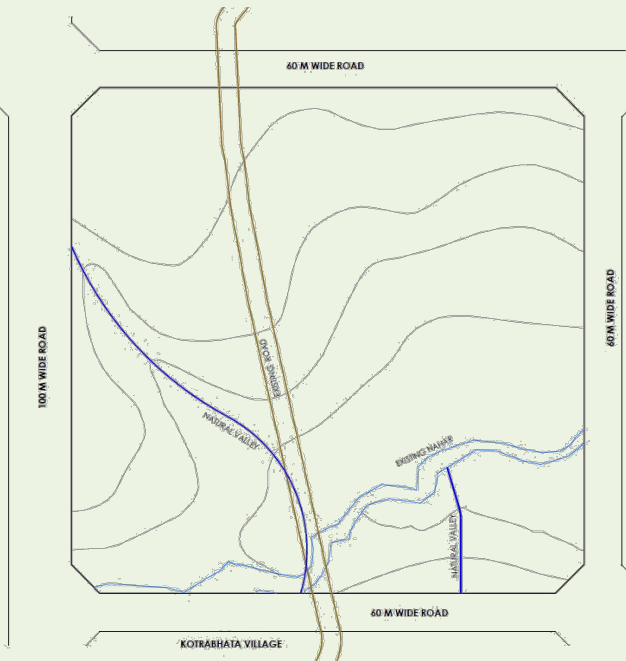
## UNDERSTANDING THE SITE

Each site has its own set of peculiarities that defines the method of approach for the design. It needs a detail understanding to the integrate the project facilities into the site, highlighting its positive character while protecting sensitive elements. The major parameters that are required to be considered are as follows:

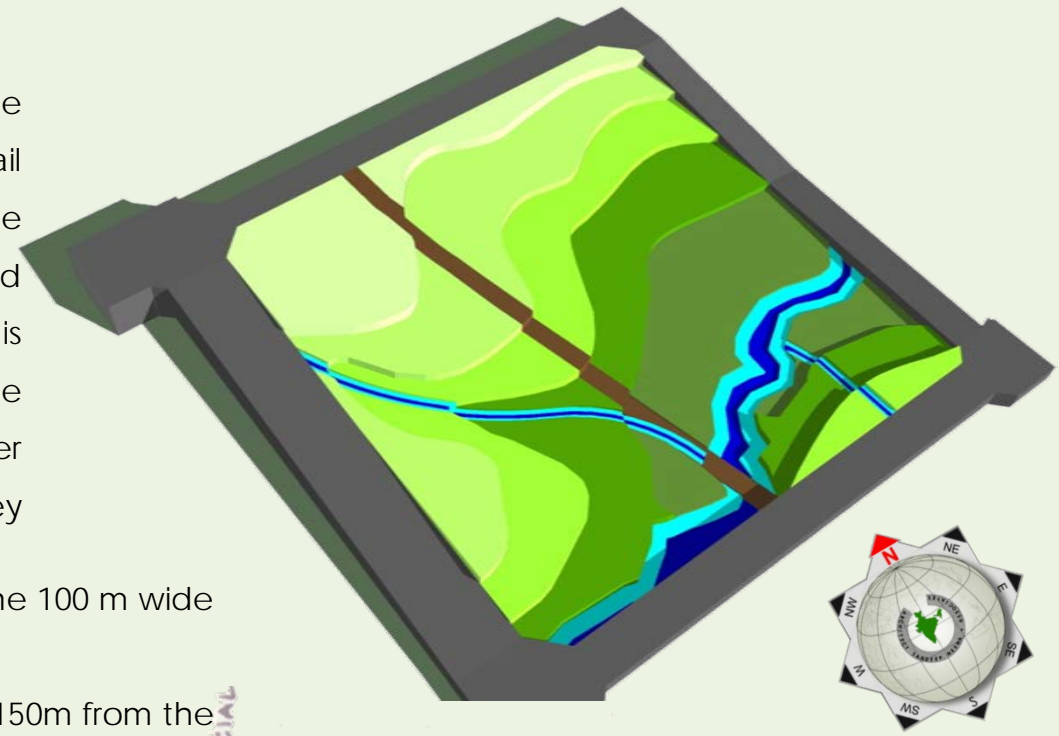
- 1. Approach to the site-** The site is situated at the vicinity of Naya Raipur. It is surrounded by roads on all the four sides. With 60m wide main road on the eastern side.
- 2. Topography-** The site has gradual slope from North to South side with a existing Nala at the southern side.
- 3. Existing Structures-** No temporary or permanent structures are present on the site.
- 4. Vegetation-** significant plantation along canal.



# PROPOSED HOUSING SCHEME FOR CGHB AT SECTOR 12, NAYA RAIPUR, CHHATTISGARH



The proposed site has gradual slope towards the canal at the south western part of site. After detail contour analysis, two valley lines are identified for the proposed site, one is from north to south and second is from south towards the canal. The existing road is connecting route for the kotrabhata village. The valley lines carry water from higher level to lower level. Riparian zone for canal is 25m and for valley lines 10m.



BRTS is proposed at the western side on the 100 m wide road.

BRTS node is proposed at the distance of 150m from the junction. People have to travel towards the southern side, so BRTS node is proposed at the lowest possible point.

So, people don't have to travel in the opposite direction.

Considering BRTS, the density on the site differs. As high density is proposed near the BRTS in 500m radius.

Medium density along the edge on other three sides. And low density development in the center.

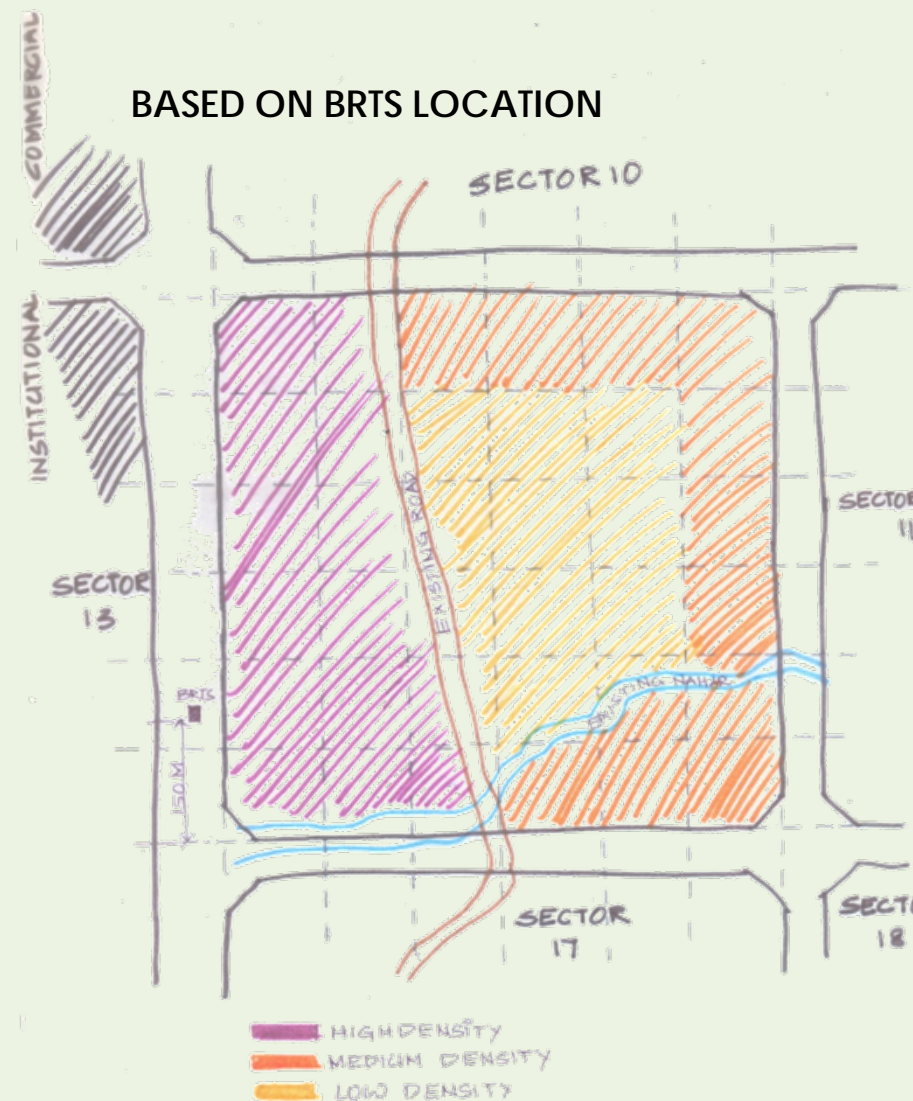
HIG are proposed along the Canal, which gives them direct view of recreational plaza developed along the canal.

MIG & EWS are proposed near BRTS zone as they are the users for public transport.

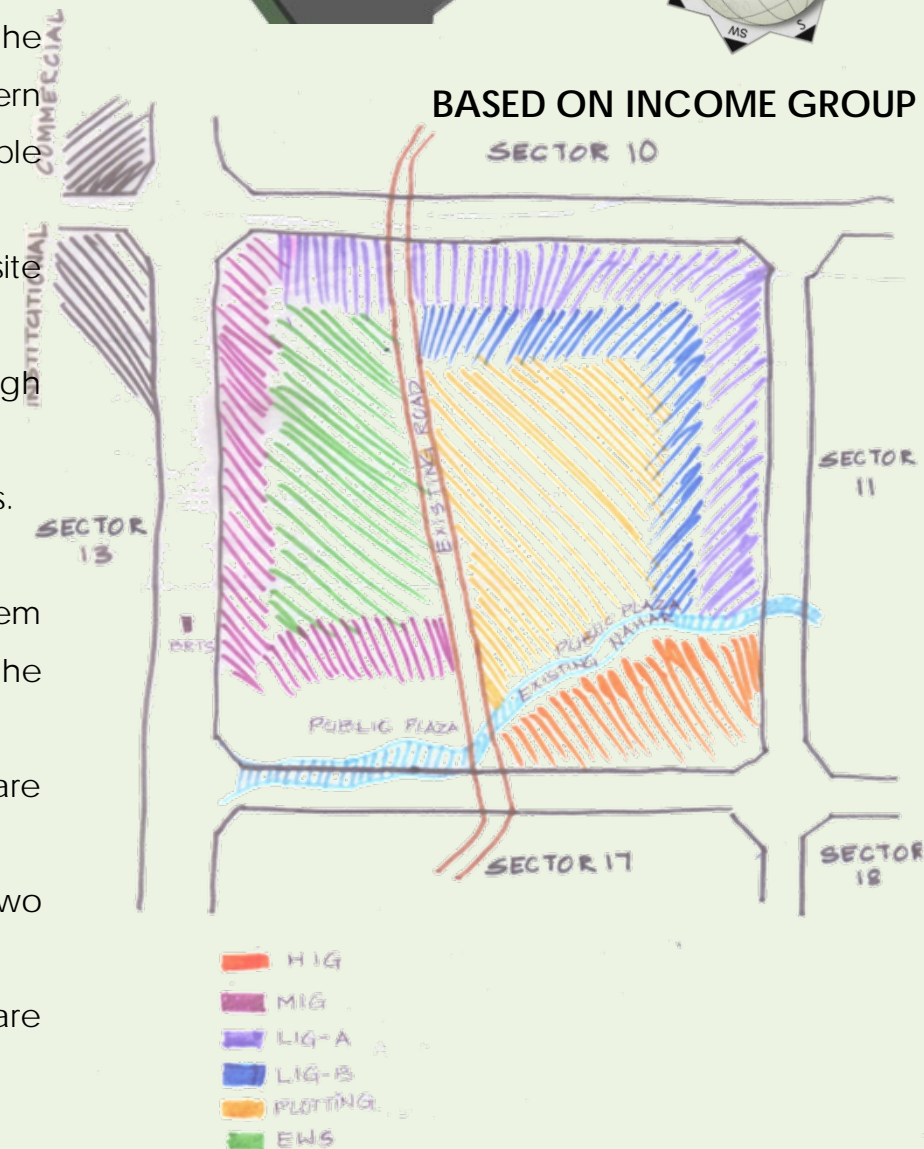
LIG A forms the edge for the site on the other two sides along with the LIG B.

•At the center plotting along with amenities are proposed

## BASED ON BRTS LOCATION



## BASED ON INCOME GROUP





# PROPOSED HOUSING SCHEME FOR CGHB AT SECTOR 12, NAYA RAIPUR, CHHATTISGARH

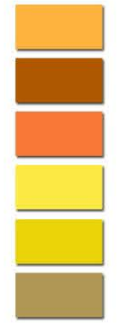
## SITE PLAN



### LEGEND

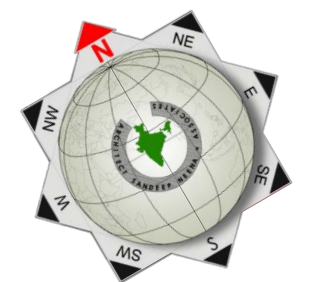
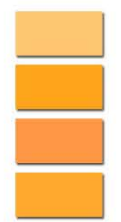
#### APARTMENTS :

- HIG
- HIG PREMIUM
- MIG
- LIG A
- LIG B
- EWS



#### BUNGLOWS :

- HIG I
- HIG PREMIUM
- SR MIG
- MIG





# PROPOSED HOUSING SCHEME FOR CGHB AT SECTOR 12, NAYA RAIPUR, CHHATTISGARH

## AREA STATEMENT

Source: Pg-35, Naya Raipur Development Plan- 2031

A TYPICAL SECTOR SHALL HAVE 250 PPH DENSITY, SO THE DENSITY FOR 64 Ha is 16000 approx. but after the detail discussion with the officials, the density is doubled . So, the amenities shall be also be increased. The master plan is done accordingly. The population density is calculated assuming 4.5 persons per dwelling unit. The number of dwelling units included in the Master Plan have been listed below:

### FOR 12 FLOORS

DETAIL AREA STATEMENT FOR APARTMENT				
TYPE	NO OF BLOCKS	NO. OF FLOORS	NO OF UNITS PER FLOOR	TOTAL UNIT
	Nos.	Nos.	Nos.	Nos.
	A	B	C	D=AXBXC
HIG	14	12	4	672
MIG	28	12	4	1344
LIG A	26	12	4	1248
LIG B	19	10	8	1520
EWS	30	6	8	1440
HIG PREMIUM	2	4	4	32
TRANSIT HOSTEL	3	4	2	24
		4	2	24
<b>TOTAL</b>	<b>122</b>			<b>6304</b>
DETAIL AREA STATEMENT FOR PLOTTING				
TYPE		PLOT SIZE	PLOT AREA (IN SQM)	NO. OF PLOTS
HIG PREMIUM		18.0 X 20.2	363.6	32
HIG1		12.6 X 18.3	230.58	36
MIG SR		11.8 X 15.3	180.54	96
MIG		9.14 X 15.3	139.842	72
<b>TOTAL</b>				<b>236</b>
<b>TOTAL NO. OF DWELLING UNITS PROPOSED</b>				<b>6540</b>

Therefore the total population is considered as **29,430**.

### FOR 8 FLOORS

DETAIL AREA STATEMENT FOR APARTMENT				
TYPE	NO OF BLOCKS	NO. OF FLOORS	NO OF UNITS PER FLOOR	TOTAL UNIT
	Nos.	Nos.	Nos.	Nos.
	A	B	C	D=AXBXC
HIG	14	8	4	448
MIG	28	8	4	896
LIG A	26	8	4	832
LIG B	19	8	8	1216
EWS	30	6	8	1440
HIG PREMIUM	2	4	4	32
TRANSIT HOSTEL	3	4	2	24
		4	2	24
<b>TOTAL</b>	<b>122</b>			<b>4912</b>
DETAIL AREA STATEMENT FOR PLOTTING				
TYPE		PLOT SIZE	PLOT AREA (IN SQM)	NO. OF PLOTS
HIG PREMIUM		18.0 X 20.2	363.6	32
HIG1		12.6 X 18.3	230.58	36
MIG SR		11.8 X 15.3	180.54	96
MIG		9.14 X 15.3	139.842	72
<b>TOTAL</b>				<b>236</b>
<b>TOTAL NO. OF DWELLING UNITS PROPOSED</b>				<b>5148</b>

Therefore the total population is considered as **23,166**.

# PROPOSED HOUSING SCHEME FOR CGHB AT SECTOR 12, NAYA RAIPUR, CHHATTISGARH

S.NO.	USE PREMISES	NO.OF UNITS (AS PER NORMS)	NO.OF UNITS (AS PER DESIGN)	TOTAL AREA(Ha) (AS PER NORMS)	TOTAL AREA (Ha) (AS PER DESIGN)
<b>E</b>	<b>RECREATION</b>				
10	PARK & PLAYGROUND			6.75	7.99
<b>F</b>	<b>UTILITY</b>				
11	WATER STORAGE TANKS		4	0.25	AS PER REQUIREMENT
12	ELECTRICITY SUBSTATION	2	2	.09	.09
13	THREE WHEELER & TAXI STAND	1	4	.05	0.23
14	PUBLIC PARKING			1.0	1.04

*Source: Pg-37 & 38 Naya Raipur Development Plan- 2031*

## Standards For Travelling Distance To Social Facilities

SOCIAL FACILITY	MAXIMUM DISTANCE(KM) (AS PER NORMS)	MAXIMUM DISTANCE(KM) (AS PER DESIGN)
Nursery School	0.50 (0.30)	0.4 (0.26)
Primary School	0.80 (0.50)	0.68 (0.48)
Higher Secondary School	1.50 (1.0)	0.83 (0.58)
Tot Lot	0.30 (0.20)	0.17 (0.10)
Park	0.80 (0.50)	0.32 (0.21)
Bus Stop	0.80 (0.50)	0.78(0.34)

*Source: Pg-38 Naya Raipur Development Plan- 2031*



# PROPOSED HOUSING SCHEME FOR CGHB AT SECTOR 12, NAYA RAIPUR, CHHATTISGARH

## PARKING IN A TYPICAL PODIUM & RECREATIONAL ZONE ALONG CANAL

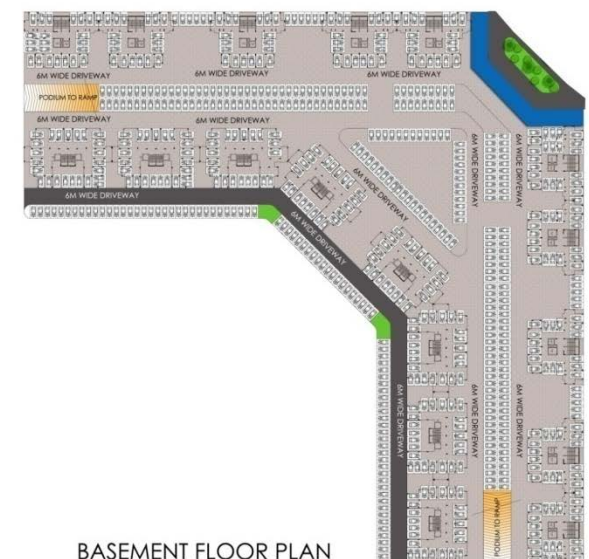
- As per NRDA norms 1.67 equivalent car space to be provided for @100 SQM of built up area. So as to fulfill the requirement of parking , a podium parking and stilt parking is proposed.
- Ramps are proposed for vertical transportation from podium to stilt.
- Adequate provision for the movement of fire vehicle is proposed .
- Provision for skylights is done for natural light & ventilation in the stilt.



- Recreational plaza is planned along the canal .
- It comprises of shops and the interactive places for interaction along the 12 m driveway.
- A viewing deck facing towards the canal.
- Parking is proposed behind the shops for visitor's
- It's a non motorized zone.



PODIUM FLOOR PLAN



BASEMENT FLOOR PLAN



SITE PLAN



# PROPOSED HOUSING SCHEME FOR CGHB AT SECTOR 12, NAYA RAIPUR, CHHATTISGARH

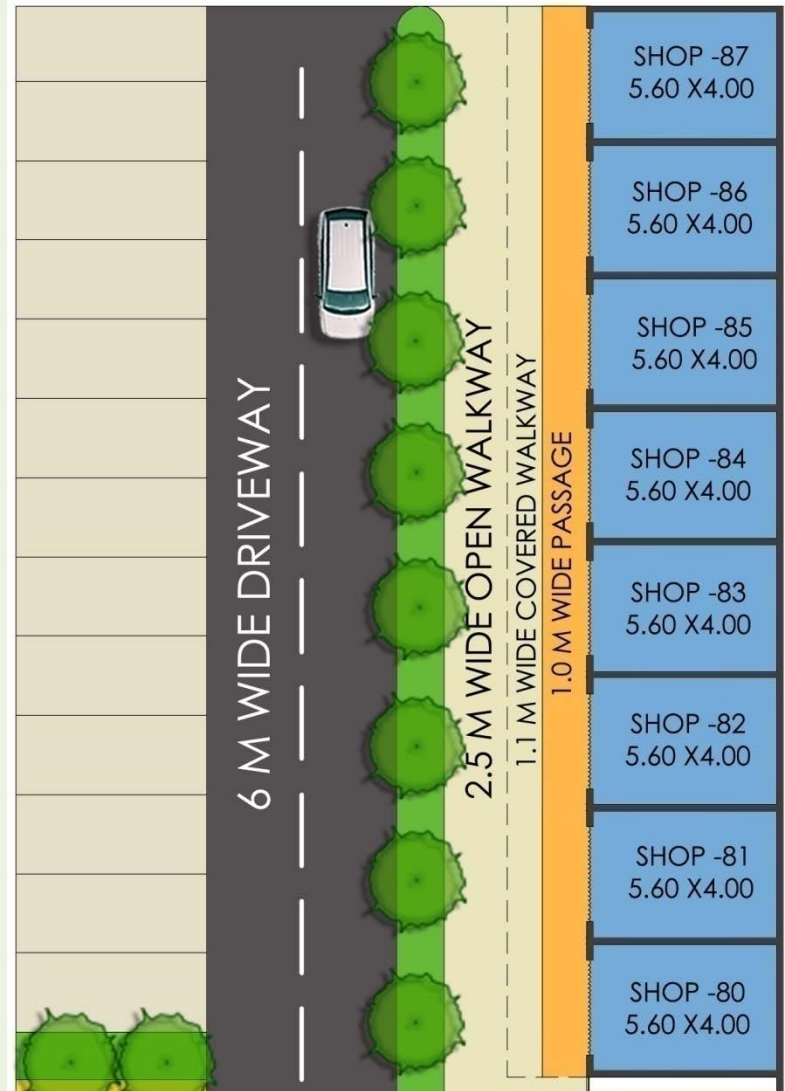
## CANTEEN, TOILET BLOCK AND LANDSCAPE



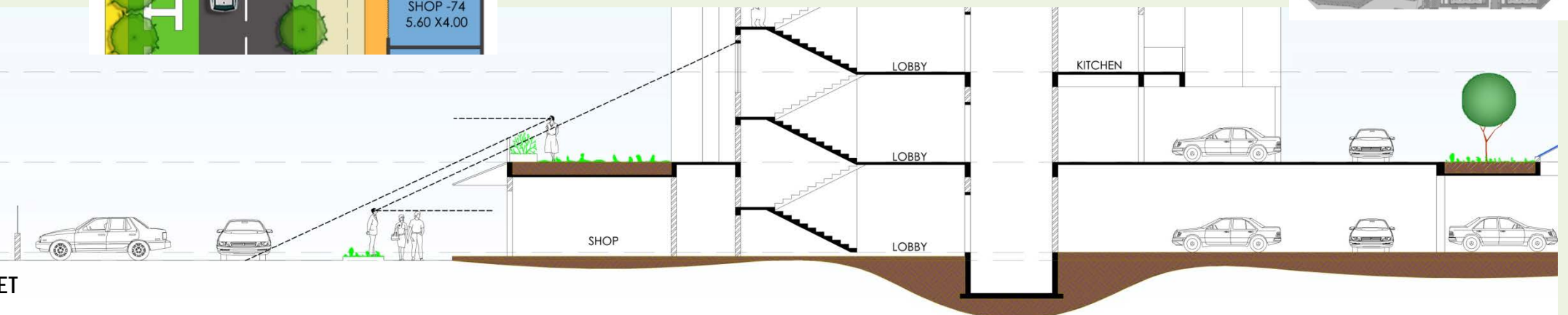
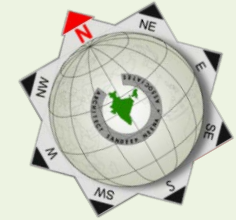
TYPICAL ROW FOR STREET

## COMMERCIAL – HIGH STREET

Shops are proposed along 100 m wide road opposite to mixed use sector. A parking line is proposed for the users, separated through the tree line. Open and covered walkways are proposed. Cafeteria and landscape is proposed at suitable distance for the shoppers.



TYPICAL ROW FOR SHOPS WITH COVERED AND OPEN WALKWAY

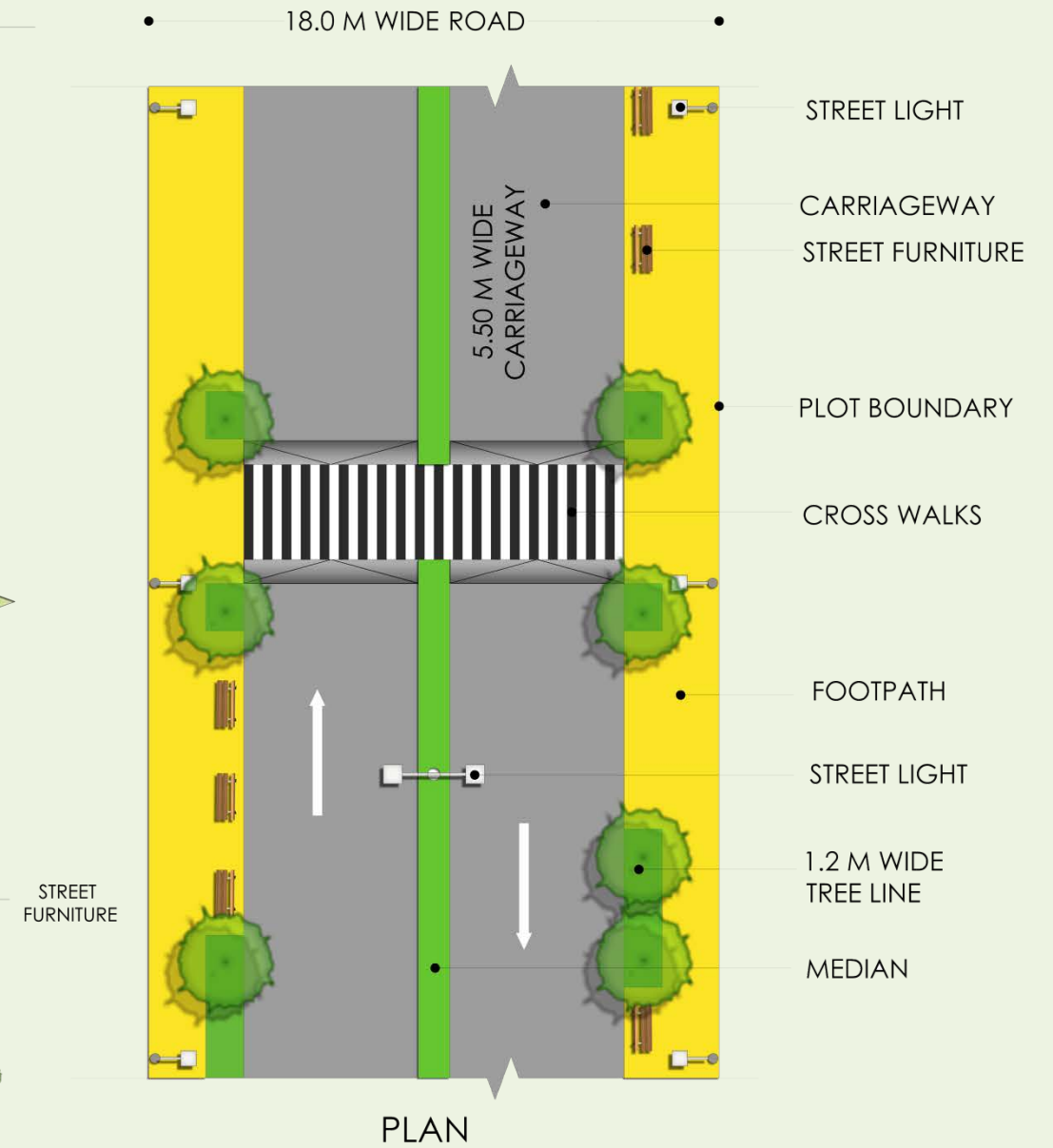
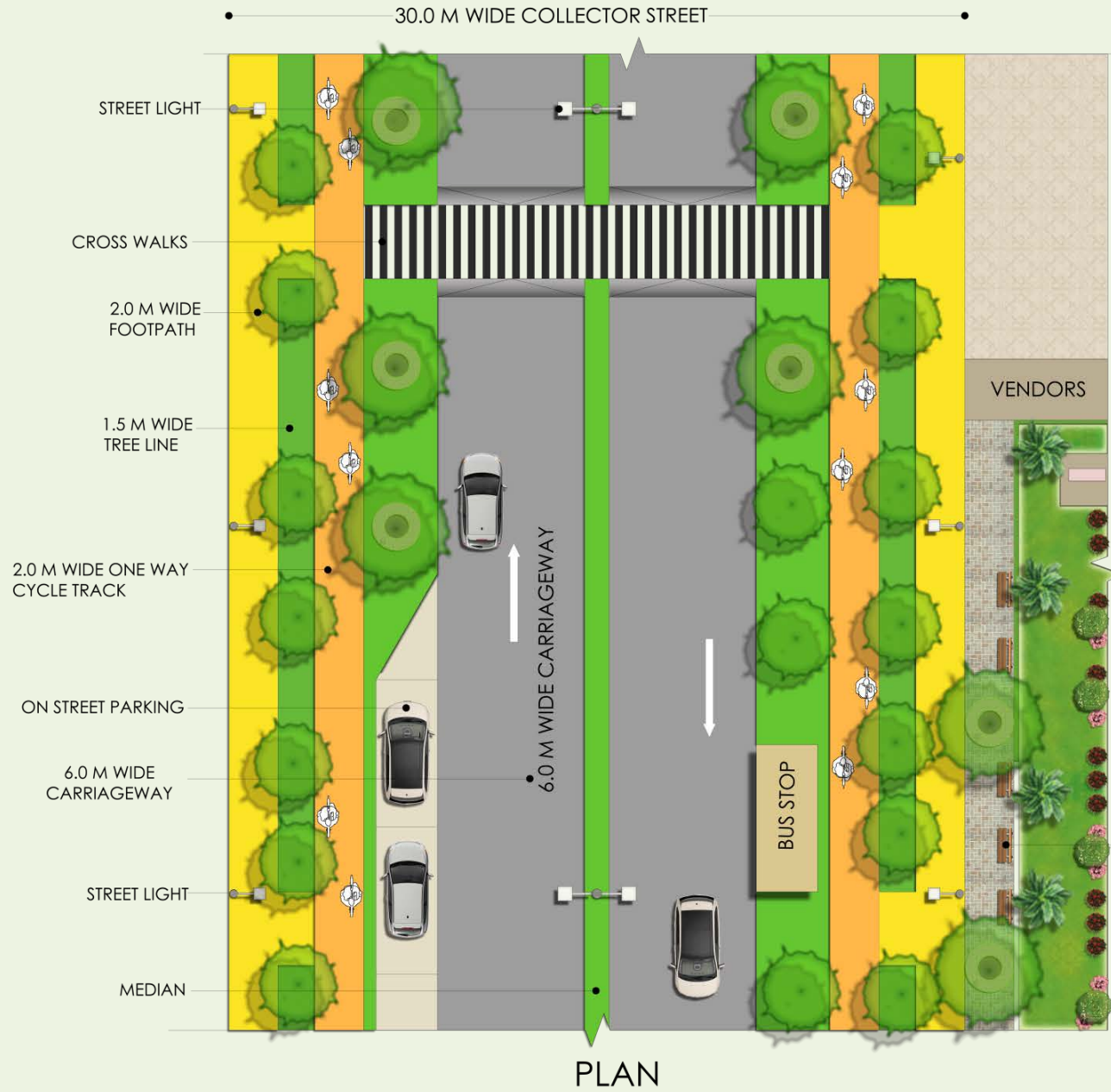


# PROPOSED HOUSING SCHEME FOR CGHB AT SECTOR 12, NAYA RAIPUR, CHHATTISGARH

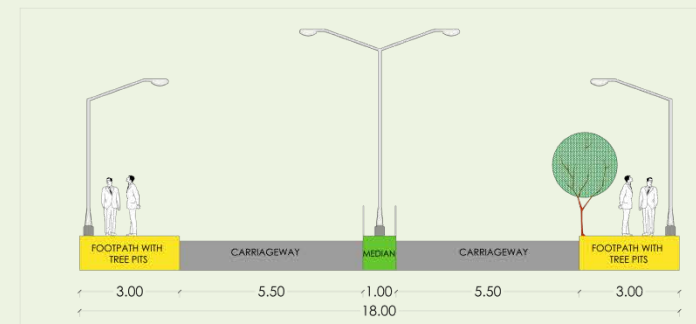
## STREET DESIGN

### 30 M WIDE COLLECTOR STREET

### 18M WIDE STREET



SECTION



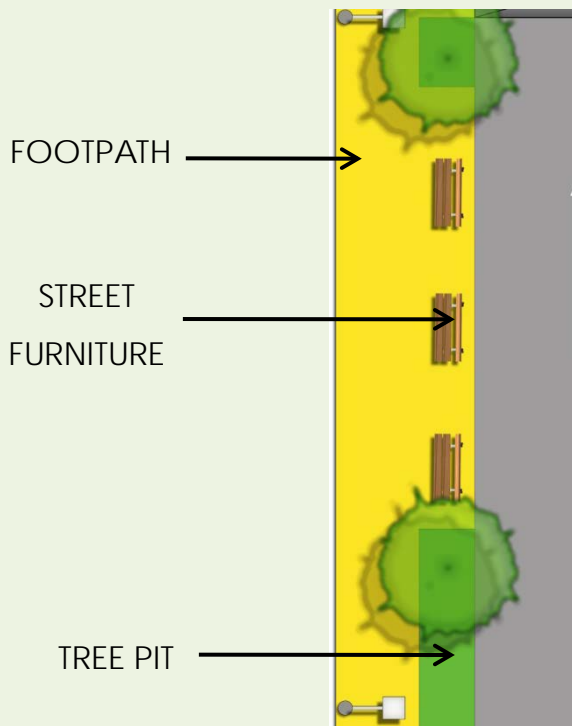
SECTION



## FOOTPATHS

**FOOTPATHS** incorporates the following:

- A continuous unobstructed *minimum width of 1.8 m*.
- No breaks or obstructions at property entrances and side streets.
- Continuous shade through tree cover.
- No railings or barriers that prevent sideways movement on and off the footpath.



• The smallest well functioning footpath/tree package has a width of 3 m, including a 1.8 m clear space and 1.2 m tree pits. Street furniture is positioned in line with the tree pits to maintain 1.8 m of clear space.

• Where required to enable the access to private properties, vehicle ramps should be provided in the landscaping strip but not in the area of pedestrian through movement



- Wider footpaths accommodate larger seating areas and are recommended in areas with large pedestrian volumes.

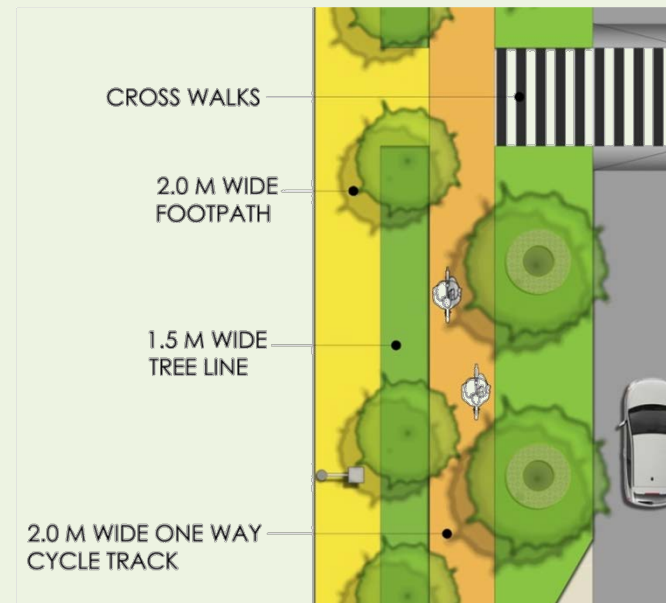


• Footpath is continuous without any breakage in between with abrupt curbs or lowering the entire footpath to the level of the carriageway is unacceptable as property entrances may become waterlogged.

## STREET DESIGN

## CYCLE TRACK

- **CYCLE TRACK** minimum width of **2 m** for one-way Movement.
- Continuity to allow for reasonable speeds.
- Manhole covers should be avoided and if unavoidable, should be level with the surrounding surface.
- Continuous shade through tree cover.



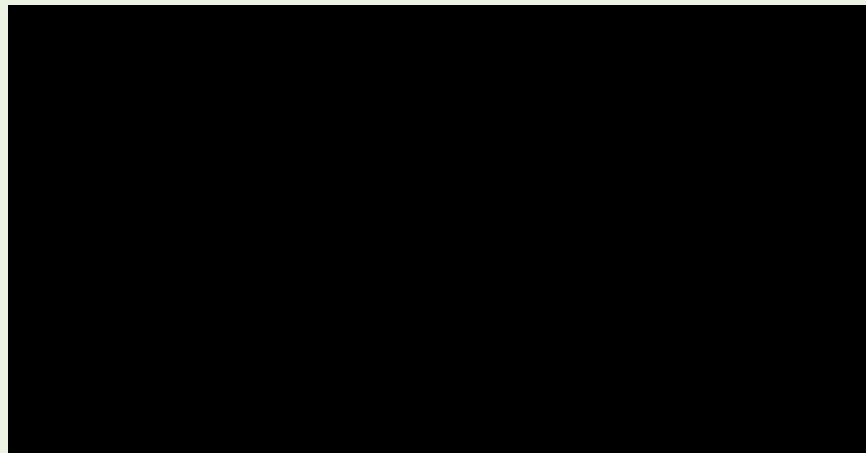
A 0.5 m buffer is needed between a cycle track and motor vehicle or parking lanes. The buffer accommodate ramps and storm water catch pits.

- **CYCLE TRACK** is continuous and shaded. Curb heights are appropriate, and storm water drains into catch pits located in the landscaped buffer.
- The curbs and signpost should be placed between the buffer of 0.5m the cycle track and parking area.



## ON STREET PARKING

- Parking Areas should be allotted after providing ample space for PEDESTRIANS, CYCLISTS, TREES, and STREET VENDING.
- Tree Pits is integrated in a parking stretch to provide shade. Otherwise, shaded street elements, such as footpaths, may be encroached by parked vehicles
- Near intersections, parking lanes is discontinued to reduce conflict and to give additional vehicle queuing space



- Cycle tracks next to parking lanes require a 0.5 M buffer so that car doors do not open over the cycle track.
- Discontinuity in the car space provides the Tree Pits so that it can shade the car as well as cycle track.

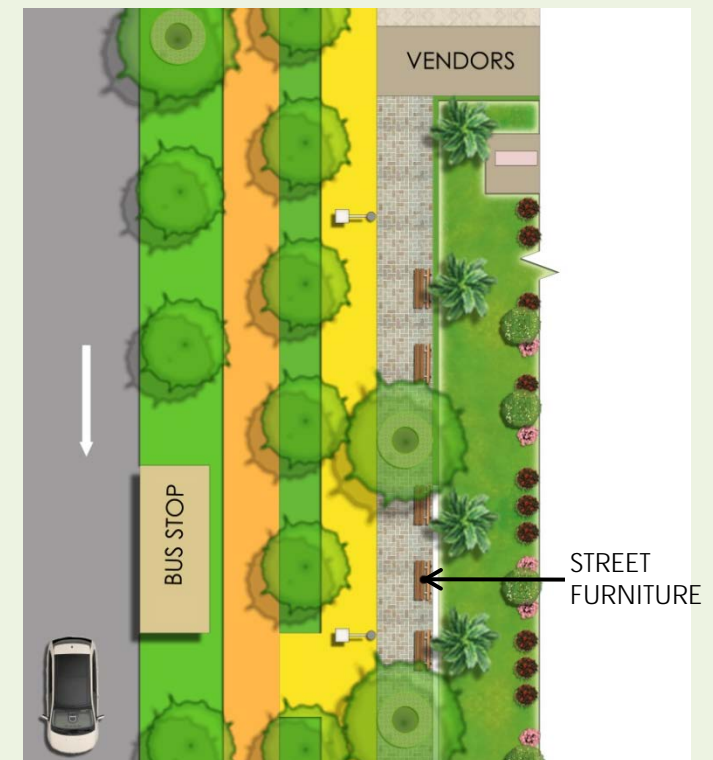


- PARALLEL PARKING for cars is the most efficient parking layout in terms of the number of vehicles relative to the area occupied. The same parking lane can be used as perpendicular parking for two-wheelers.

## STREET DESIGN

- Furniture is located where it does not obstruct through movement. Street Vending islands in shared streets are great places to install furniture.
- STREET FURNITURE helps to make a street an Interactive Space to spend time.
- If benches can't be provided then A tree pit doubles as a bench. Located in the parking lane, the bench leaves enough clear space for pedestrians.

- Street Furniture and other street design elements that are static need to be aligned in order to leave adequate clear width for the movement of Pedestrians, Cyclists, and Motor Vehicles.
- On a 3 m wide footpath, furniture and amenities is provided sparingly and in the tree line to maintain a minimum 1.8 m clear space for walking.

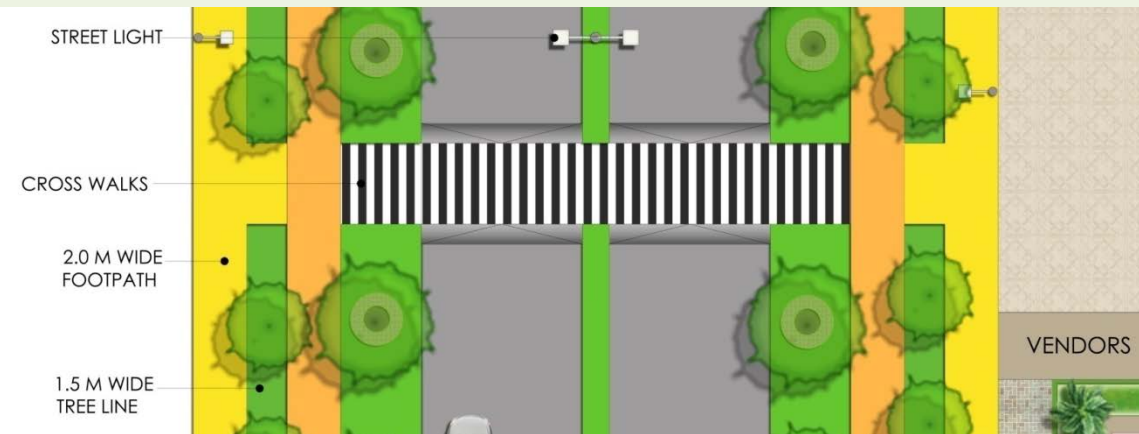


- Mostly street furniture, especially benches is placed where it receives shade. STREET FURNITURE provides people places to Sit, Rest, and Interact with each other.



## CROSSWALK

- Pedestrian crossings allow pedestrians to cross busy streets safely and conveniently, as **Painted Crossing** is ineffective and if **Raised Crossing** is proposed it compels the vehicle users to slow down, also it reduces the accident.



- Raised crosswalks are elevated to the level of the adjacent footpath (150–200 mm above the road surface) with ramps for motor vehicles.
- Raised crosswalks located at all intersections (both signalized and uncontrolled) and at frequent intervals (e.g. every **150–200 m**)
- Crosswalks are as wide as the adjacent footpath and never **NARROWER THAN 2 M**.

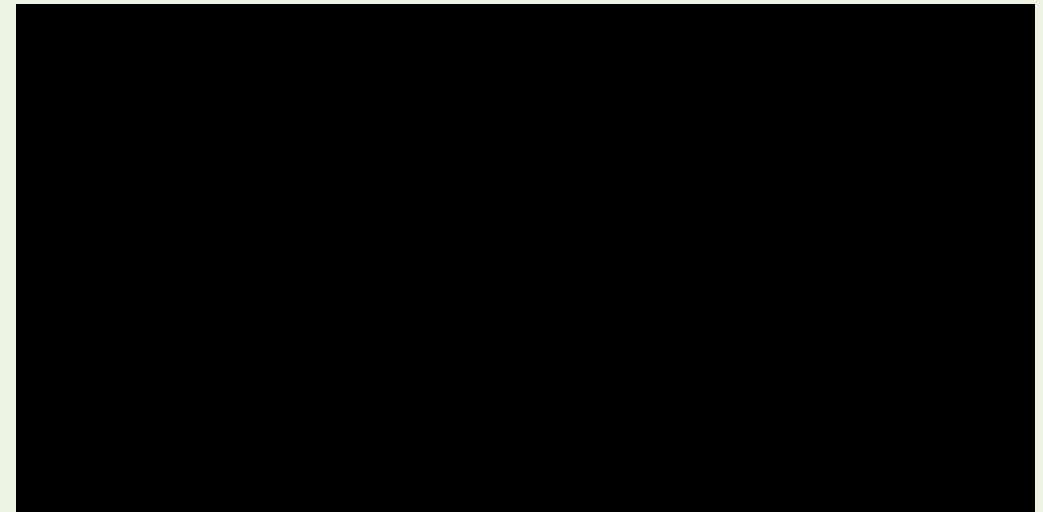


- Between formal crossings, hardscaped pedestrian
- At both formal and informal crossings, bulb-outs into the parking lane reduce the total crossing distance.
- 3m wide crosswalk is proposed adjacent to the footpath.

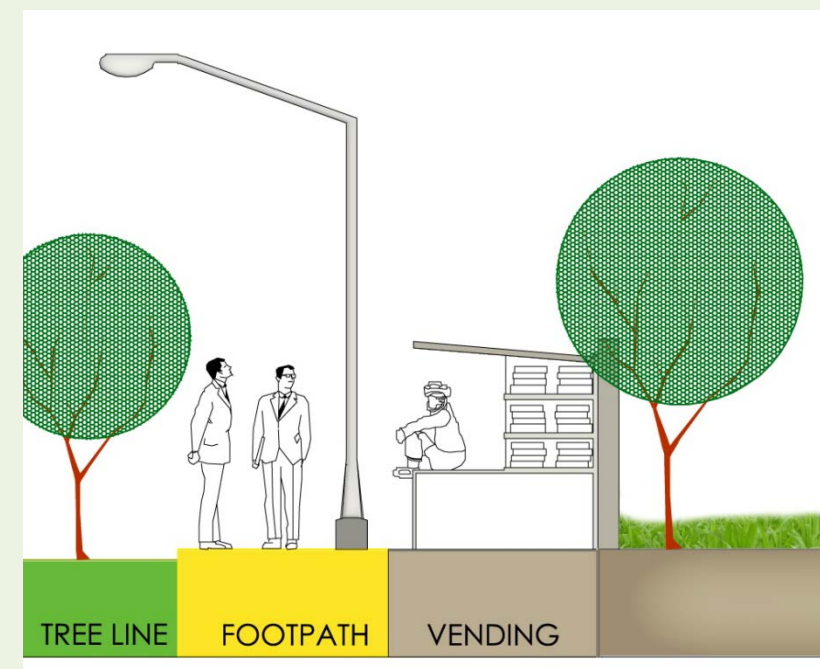
## STREET DESIGN

## STREET VENDING

- Street vendors are accommodated where there is demand for their goods and services—near major intersections, public transport stops, parks, and so on.
- Vending areas are positioned so as to ensure the continuity of Cycle Tracks and Footpaths.
- Ample seating is provided at regular intervals near the vending stalls.



- Street Vending offers convenient access to Economical Goods and services for a wide range of income groups,
- Vending Zones makes urban space more Vibrant, Promote Social Supervision, and Improve Public Safety.



# PROPOSED HOUSING SCHEME FOR CGHB AT SECTOR 12, NAYA RAIPUR, CHHATTISGARH

## SOLAR ENERGY ...ITS IMPLEMENTATION

SOLAR PANELS WORKS ON 20% EFFICIENCY THAT IS FOR 5 HOURS PER DAY.

4 PANELS OF 1.66MX1.0M PRODUCES 1kW ELECTRICITY IN PEAK HOUR

MARKET PRICE CONSIDERED FOR 1 KW SETUP ( INCL. PANELS, BATTERY & INVERTER)=Rs.1,30,000/-

SUBSIDIES FROM CENTRAL GOVERNMENT – 40%

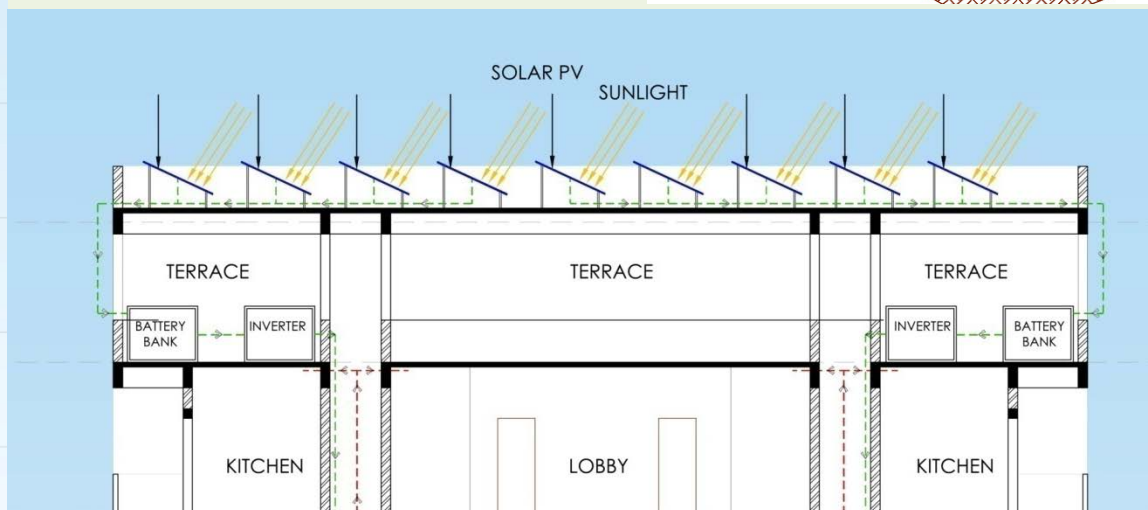
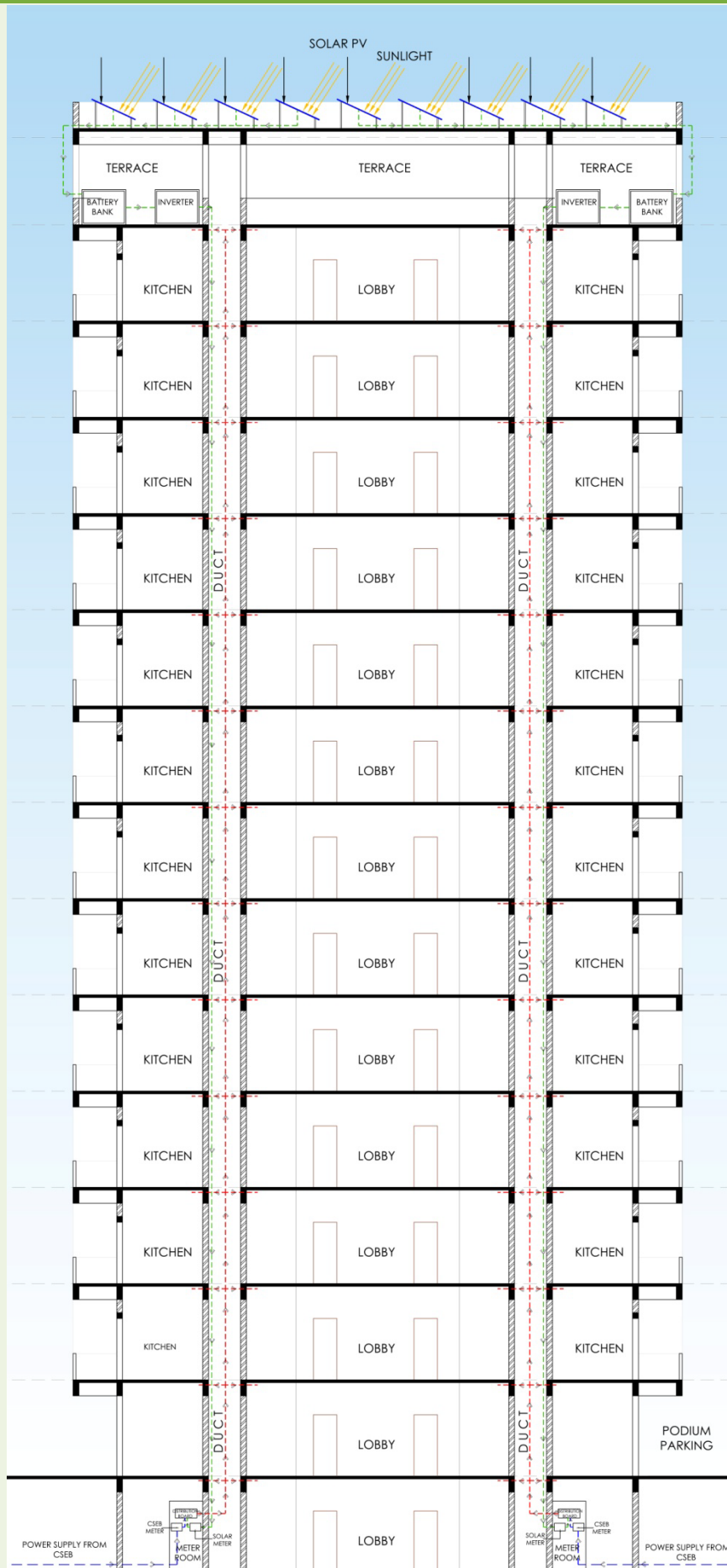
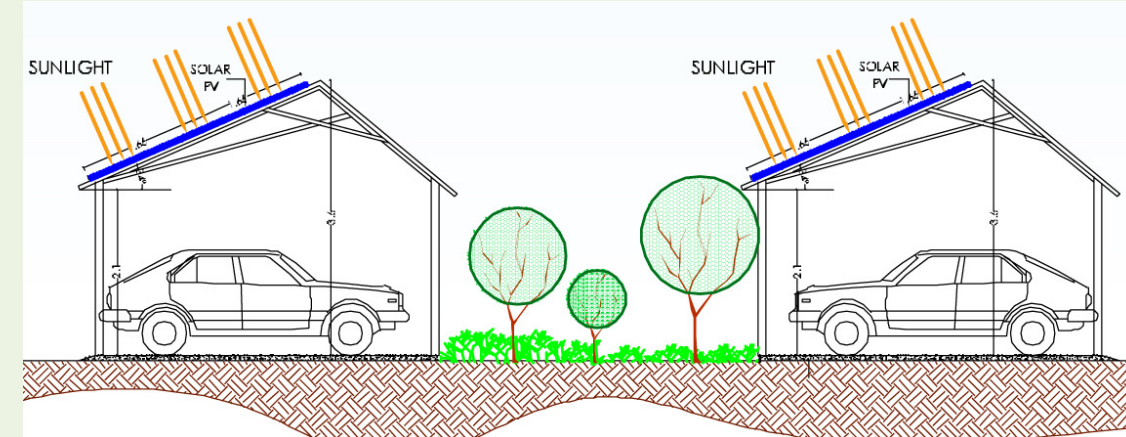
SUBSIDIES FROM STATE GOVERNMENT – 30%

HENCE PAYABLE AMOUNT BY THE OWNERS - 39,000/- Per KW

Solar Panels Installed at the of Roof of Visitors Parking

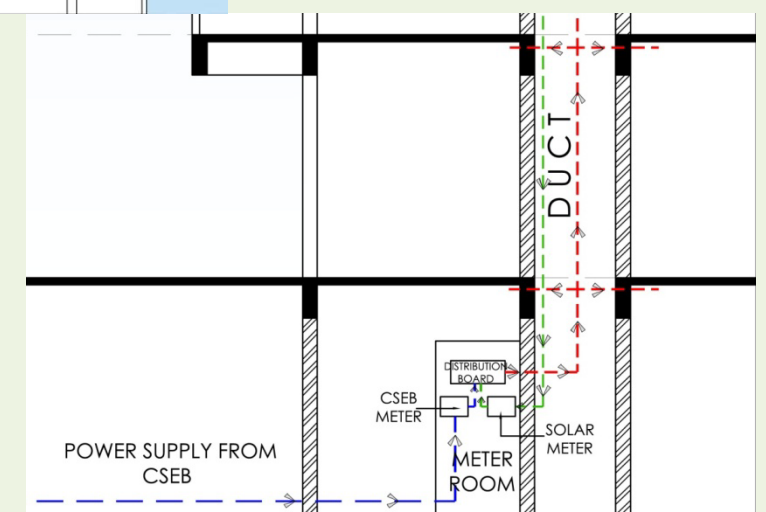
HENCE THE ENTIRE COST SHALL BE RECOVERED IN 5 YEARS WITH SAVINGS FOR NEXT 20 YEARS.

1 KW = 1 UNIT OF ELECTRICITY AS PER CSEB  
Chargeable at Rs.4/- per unit



•A separate slab is proposed above the terrace floor for solar PV mounting. On the terrace floor, an integrated battery bank is proposed. To convert dc current to ac current, an inverter is proposed,

- The power generated from the SOLAR PV PANELS is transferred to the ground floor meter room.
- A separate meter for SOLAR PV shows the total power generated from solar panels.
- A common meter connects both the SOLAR PV lines and CSEB line.
- Than the distribution is done from there.





# PROPOSED HOUSING SCHEME FOR CGHB AT SECTOR 12, NAYA RAIPUR, CHHATTISGARH

## PUBLIC TRANSPORT



- School bus stops are provided along the main 30.0 m wide collector street for easy access of the people.
- Bus bays are provided for safety of the passengers and also to avoid traffic congestion.



- Taxi stands are provided in all the sectors at the main entrance.
- Seating facility for waiting passengers is provided.
- The design is made accessible by including signage's, ramps, handrails and ramps wherever needful.

## BARRIER FREE PLANNING

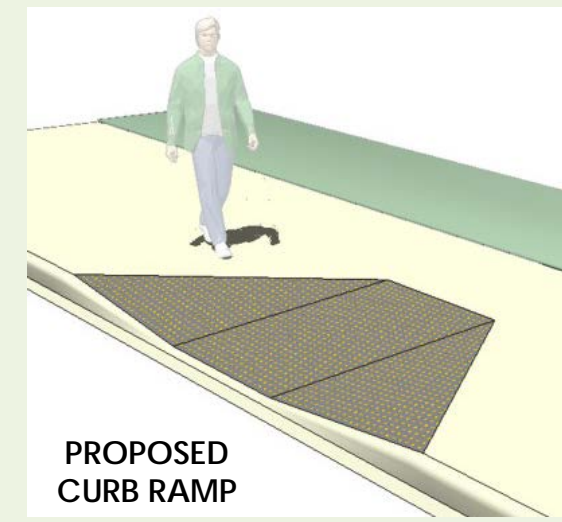
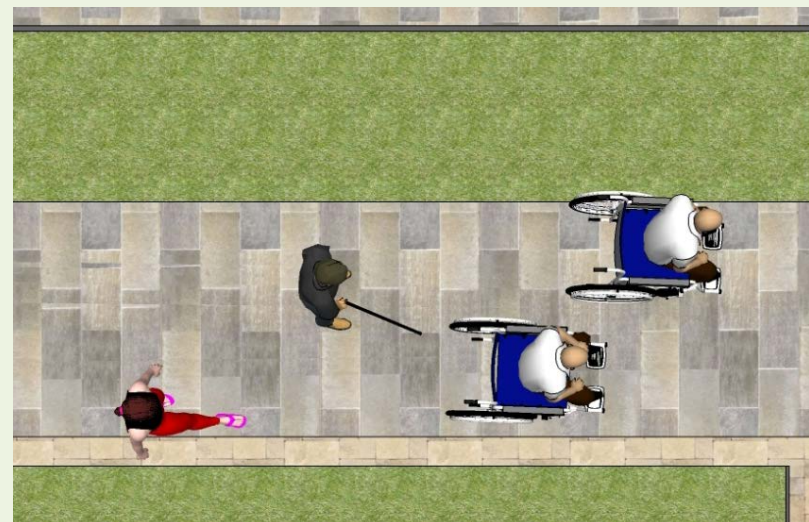
- The minimum width of an unobstructed pathway is 0.90 m.
- The minimum width of a two-way wheelchair traffic passage is 1.50 m. The preferable width is 1.80 m.
- The height of a curb should be between 0.07 m and 0.15m



CROSS WALKS FOR CROSSING THE ROAD

- The surface of an accessible pathway should be smooth, continuous, non-slip and even.
- Intersecting pathways should blend at one common level.
- Spaces below ramps and stairs should be blocked out completely by protective rails or raised curbs or marked with a tactile surface.

## FOOTPATH



PROPOSED CURB RAMP



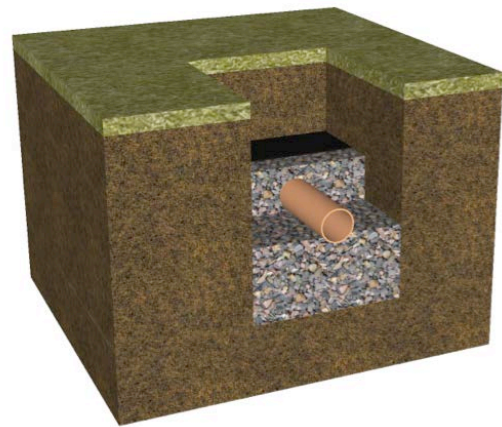
# PROPOSED HOUSING SCHEME FOR CGHB AT SECTOR 12, NAYA RAIPUR, CHHATTISGARH

## RAIN WATER HARVESTING

- Provision for **RAIN WATER HARVESTING** is provided for ground water replenishment. The site has an existing nahar flowing through it.
- **TRENCHES** along the edge of the nahar is dug and filled with construction debris. These debris are slightly compacted and covered with stone slabs to enable percolation through them. This area of settled from the nahar also takes care of the rise in water table during heavy rains.
- The Pathway along the nahar has **STORM WATER PIPES** to carry water from the roads to the trenches where this water infiltrates into the ground.
- The dividers with plantation also act as percolation pits as seen in the illustration.
- In building blocks **PVC PIPES** are installed to Collect Rain Water and take it to the Percolation Chambers.
- Through these Percolation Chambers the ground water is replenished.
- These percolation chambers have layers of sand, gravel and aggregate for removing solid waste from this rain water.



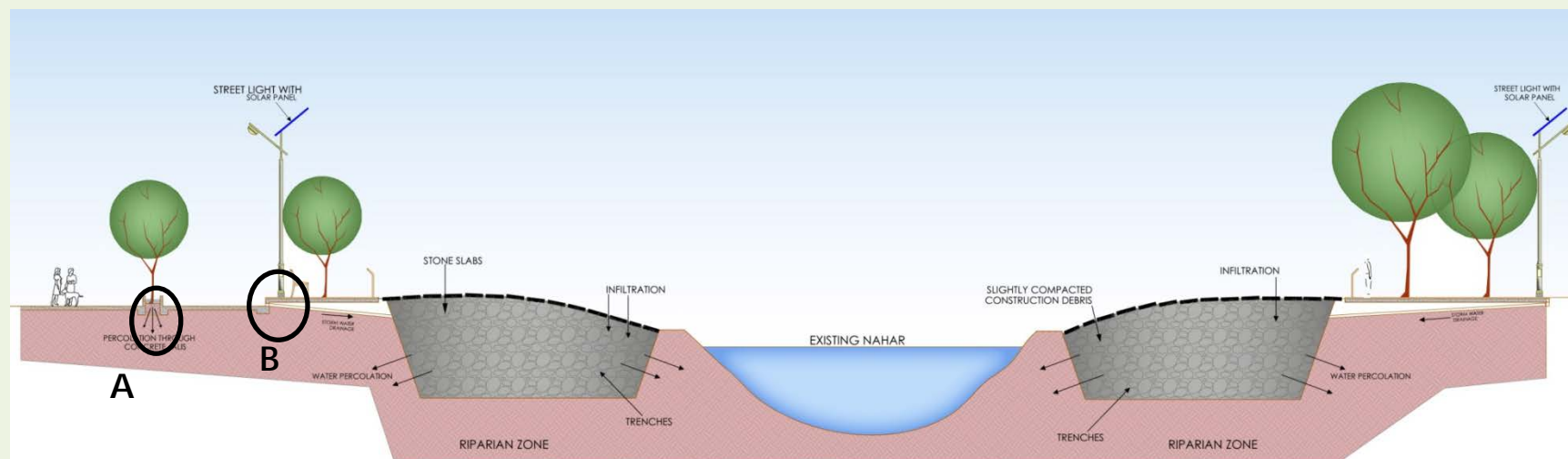
DETAIL AT A



DETAIL AT B



DETAIL AT B

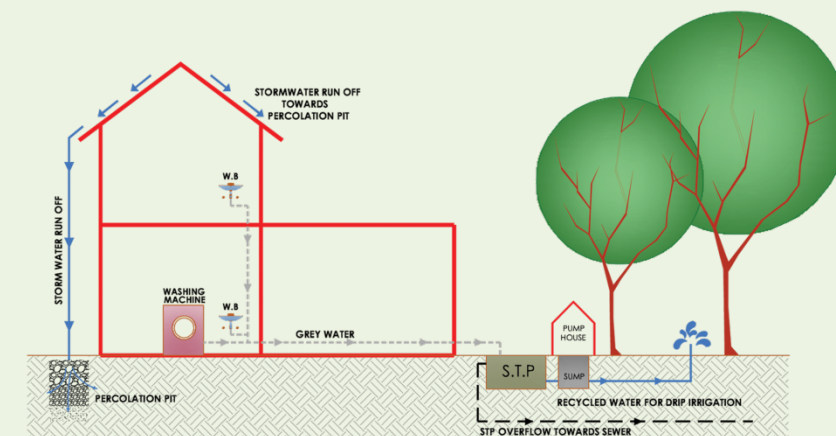


SECTION THROUGH NAHAR AND ADJOINING AREAS

## WATER RECYCLING

### GREY WATER RECYCLING IN DWELLING UNITS

- Greywater in dwelling units is generated from wash basins, washing machines and bathtubs.
- It accounts for about 60%-80% of the outflow produced in homes containing little or no pathogens and 90% less nitrogen than wastewater (toilet water).



### SCHEMATIC DIAGRAM FOR WATER MANAGEMENT IN A DWELLING UNIT

- The recycled water is used for irrigation purposes by the method of Drip Irrigation
- In dwelling units grey water is collected in the **STP**.
- It is then supplied to Garden for Irrigation purposes.
- The overflow from the STP is directed towards main sewer line along with Black Water.
- **STORM WATER** run off is taken to the Percolation Pits for ground water replenishment.
- The percolation pit has gravels, aggregates and sand to filter the water.



# PROPOSED HOUSING SCHEME FOR CGHB AT SECTOR 12, NAYA RAIPUR, CHHATTISGARH

VIEW



CENTRAL CORE



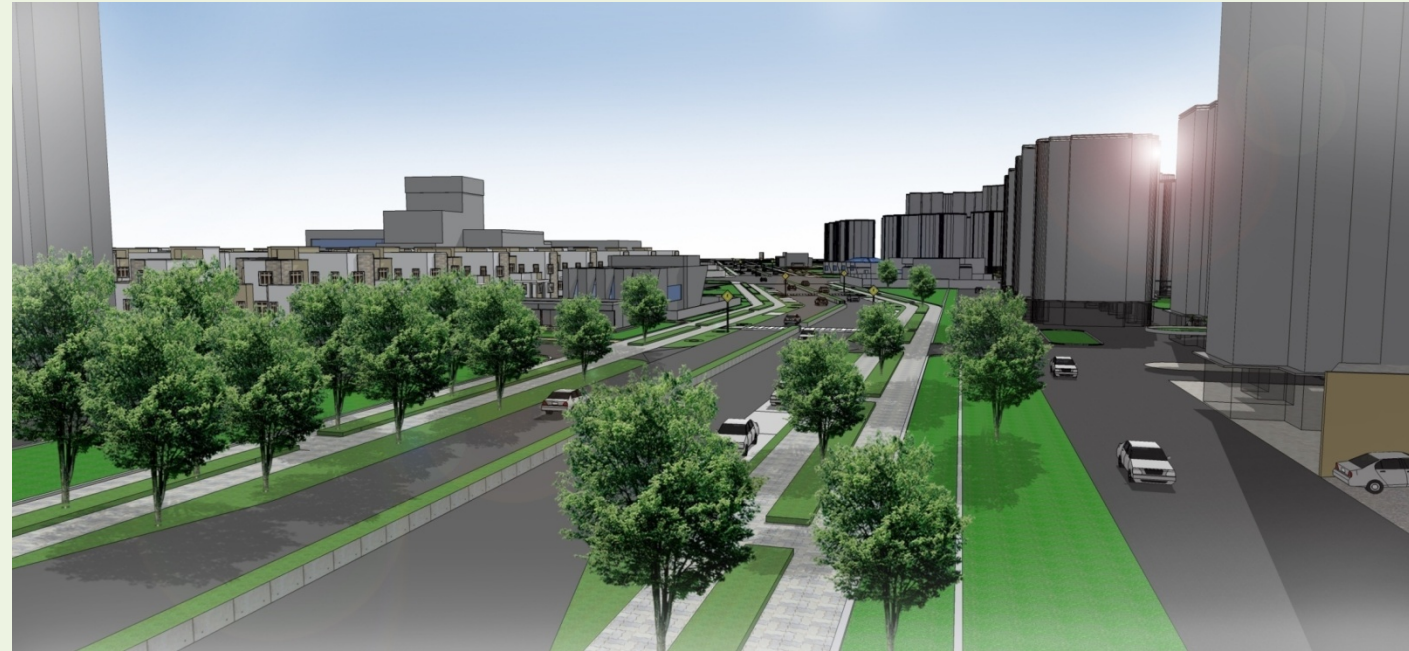
AERIAL VIEW



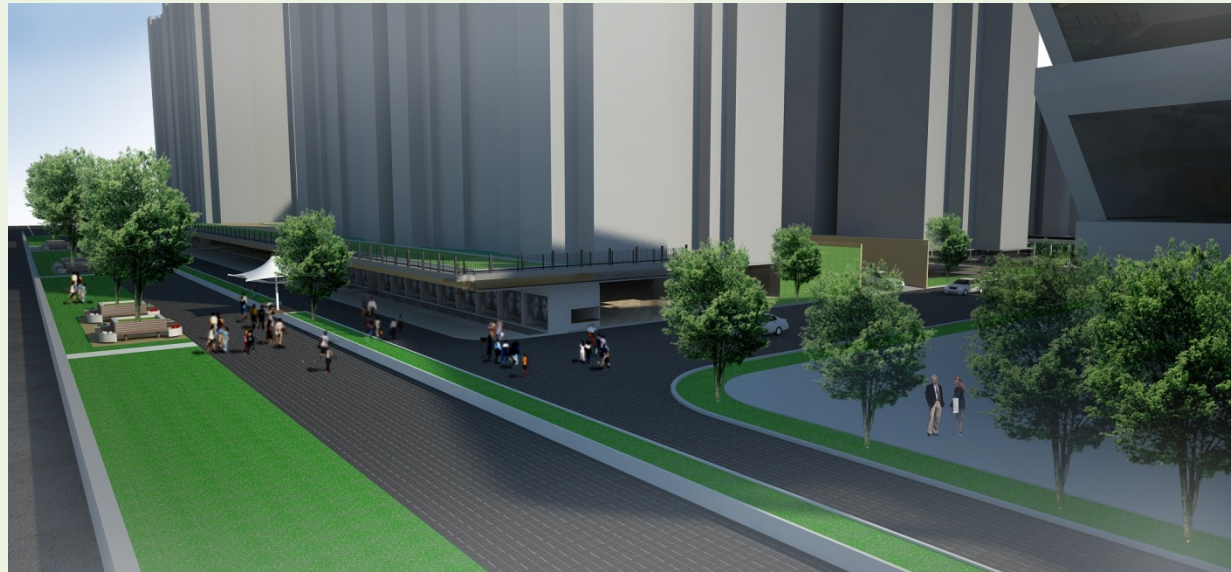


# PROPOSED HOUSING SCHEME FOR CGHB AT SECTOR 12, NAYA RAIPUR, CHHATTISGARH

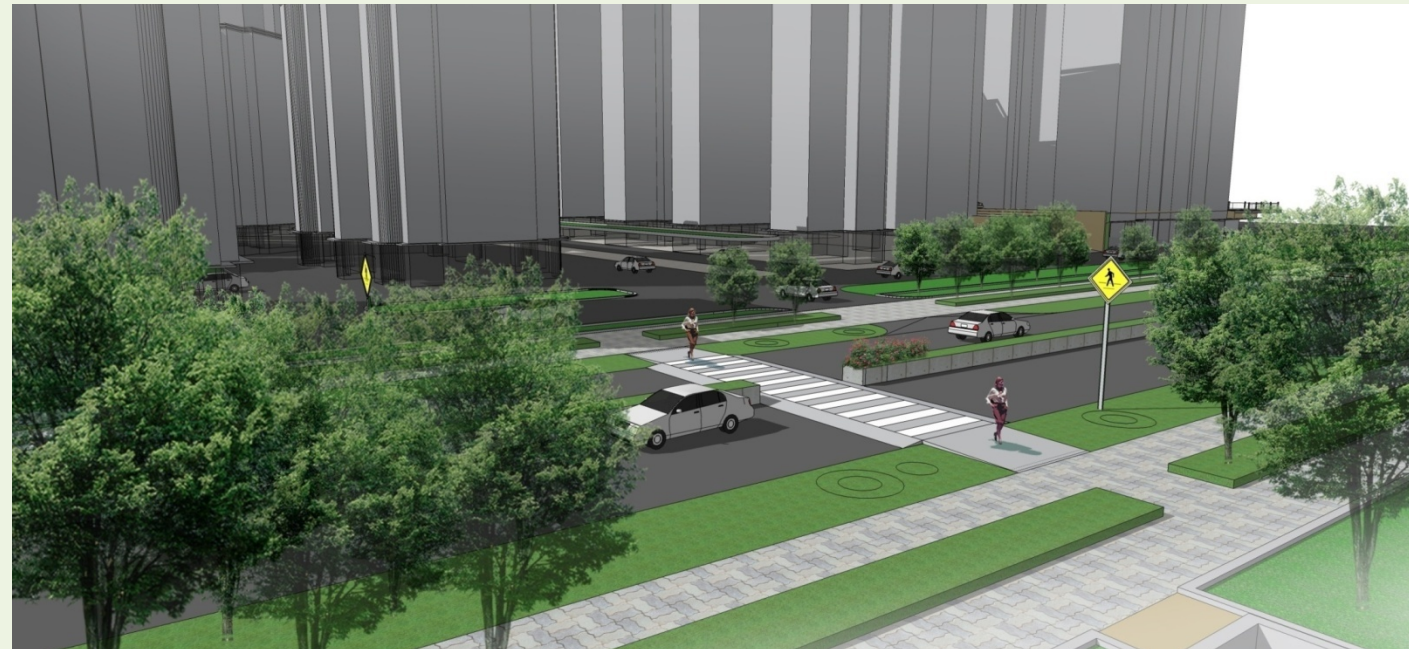
## VIEW OF 30.0 M WIDE ROAD



## VIEW OF HIGH STREET



## VIEW OF CROSS WALKS

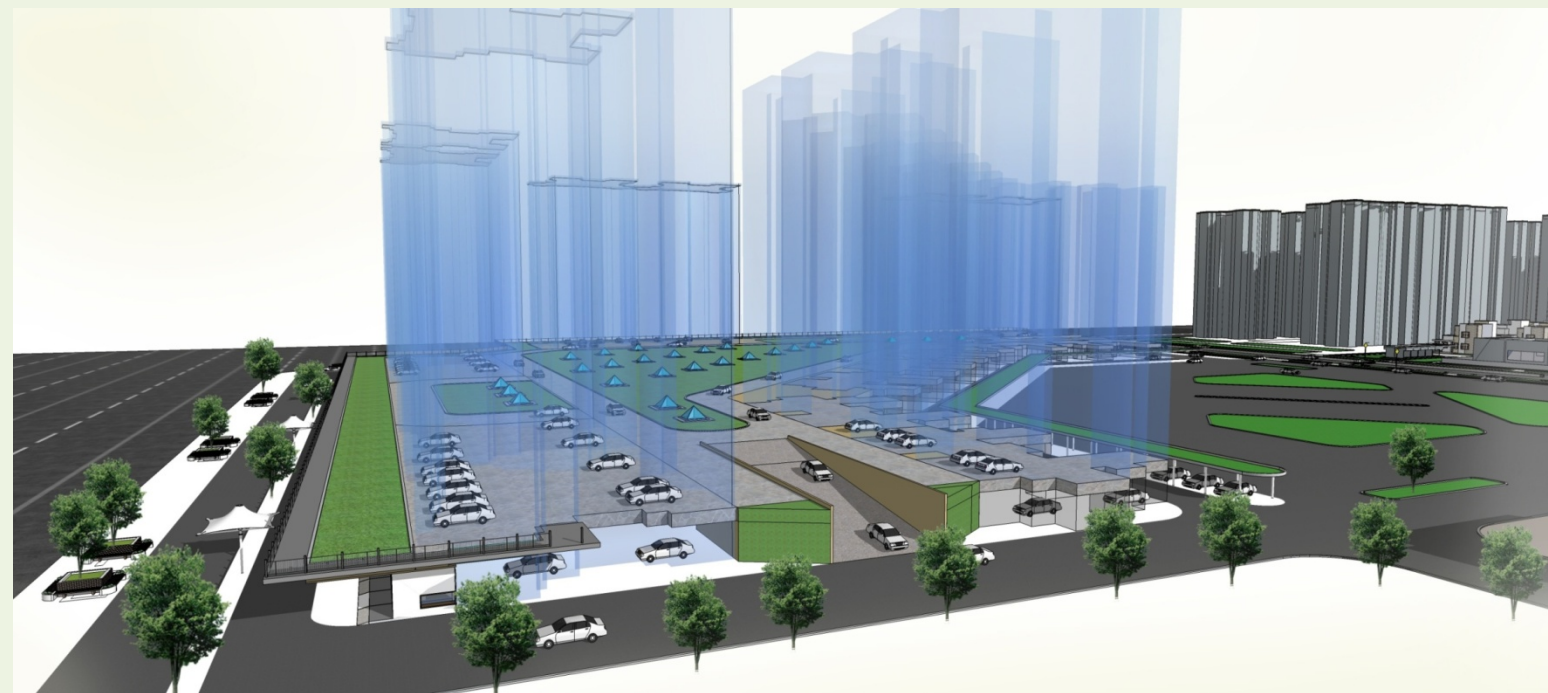




# PROPOSED HOUSING SCHEME FOR CGHB AT SECTOR 12, NAYA RAIPUR, CHHATTISGARH

AERIAL VIEW OF PODIUM

VIEWS





# DESIGNING OF MODELS OF RURAL TOILETS IN CHHATTISGARH

## OPEN DEFECATION, A serious threat!!

Open defecation is a serious threat to health and nutritional status, in addition to the safety of women and girls. Globally, India has the largest number of people, more than 620 million still defecating in the open. About half the population of India use toilets.

In most surveys it has been noted that people in the rural and sub-urban areas are hesitant of building toilets because of the high costs of construction more than the cultural or habitual constraints.

Low cost sanitation depends largely on the locally available material. As for Chhattisgarh, depending upon the availability of different regions and the site condition 5 models of rural toilets have been proposed. With common key features

- Use of locally available materials
- Can be built by unskilled labors.
- Clear size of toilets is 4'0" x4'0"
- Different roof materials are proposed, which are common in rural areas
- The models are designed such that a new model can be prepared with combination of any two or three models.
- For walls, it is not necessary to use first class bricks, second or third class bricks can also be used.

So different models used are

- 1) Burnt Brick wall with G.I. corrugated roofing
- 2) Burnt Brick wall with Asbestos corrugated roofing
- 3) Burnt Brick wall with Thatch roof.
- 4) Stone wall with country tile roofing



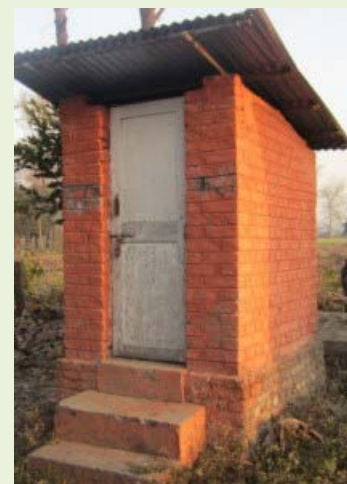
**BAMBOO**



**BAG (Plastic or Jute)**



**BUSH (Hay)**



**BRICK**



**BOULDER**

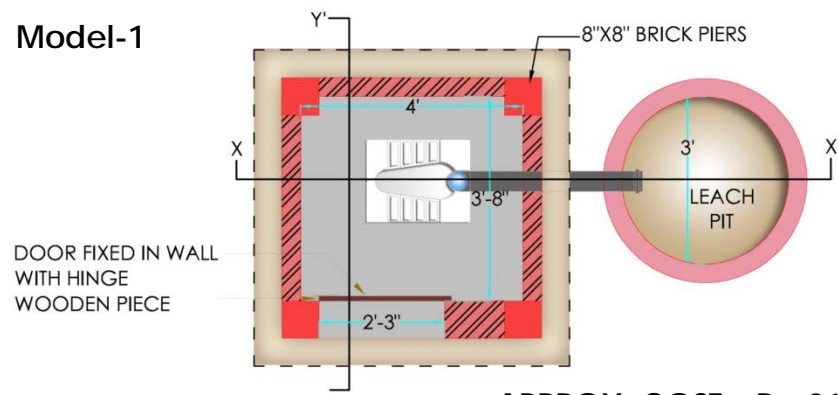


**BLOCKS**



# DESIGNING OF MODELS OF RURAL TOILETS IN CHHATTISGARH

**Model-1**



APPROX. COST – Rs. 8120/-

**•Brick Wall Construction:**

- The internal size of the toilet has been kept to 4' X 4'.
- A circular Leach Pit of 3' diameter has been proposed next to the toilet.
- Four brick piers size 8" x 8" are proposed at the corners with 4" surrounding walls.
- The roofing material in this type is Galvanized Iron Corrugated Sheet.
- The sheets rest upon the bamboo rafters running along both the axes.

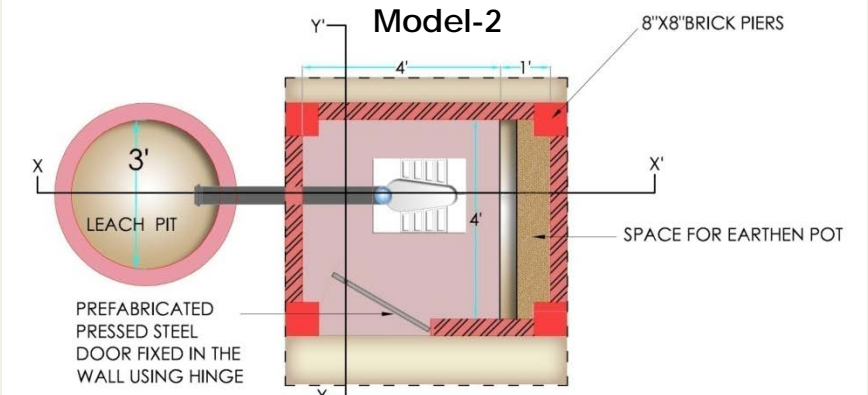
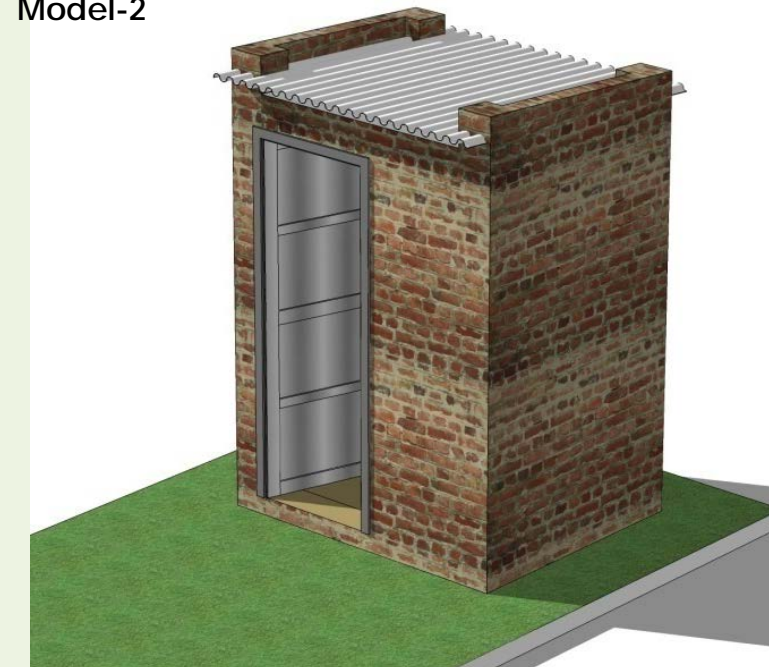
**BENEFITS –**

- Mainly proposed for sub-urban areas, where transportation is easy.
- For areas, where brick is locally available.
- Easy installation.
- Easy maintenance and repair.

**Model-1**



**Model-2**



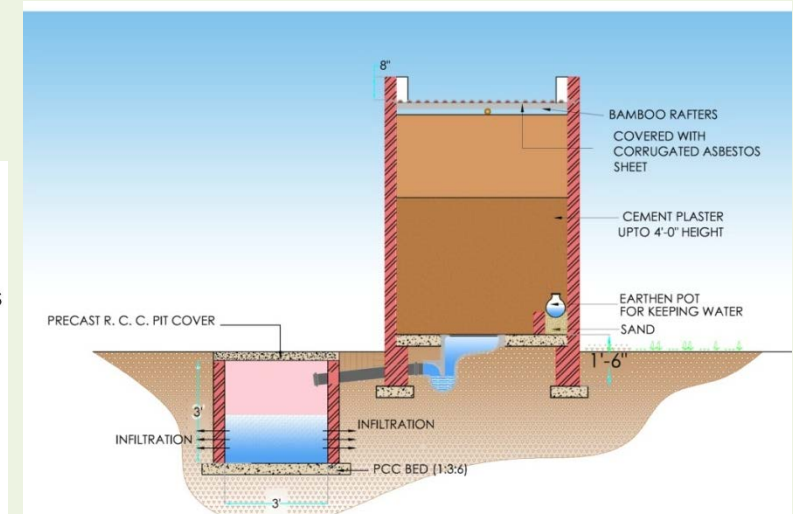
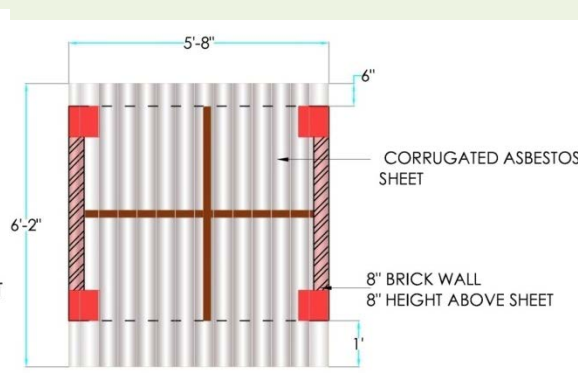
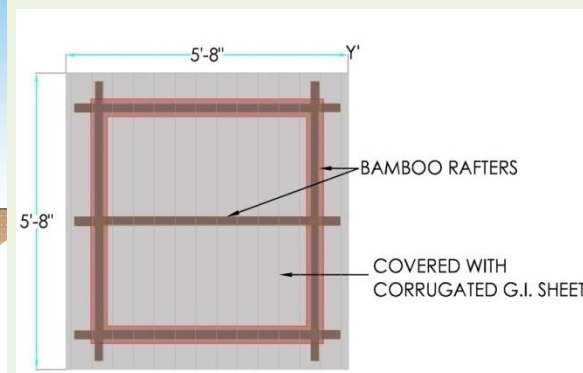
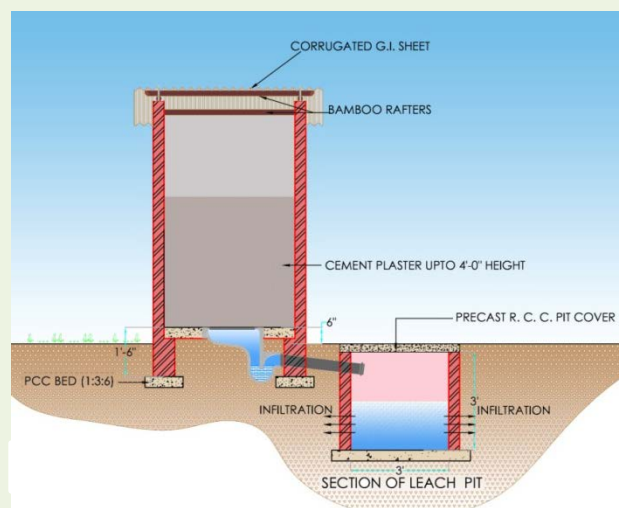
APPROX. COST – Rs. 9160/-

**•Brick Wall Construction:**

- The internal size of the toilet has been kept to 5' X 4'.
- 1'x4' space is provided for keeping earthen pots
- A circular Leach Pit of 3' diameter has been proposed next to the toilet.
- Four brick piers size 8" x 8" are proposed at the corners with 4" surrounding walls.
- Corrugated asbestos sheet is laid over wooden battens for roofing.

**BENEFITS-**

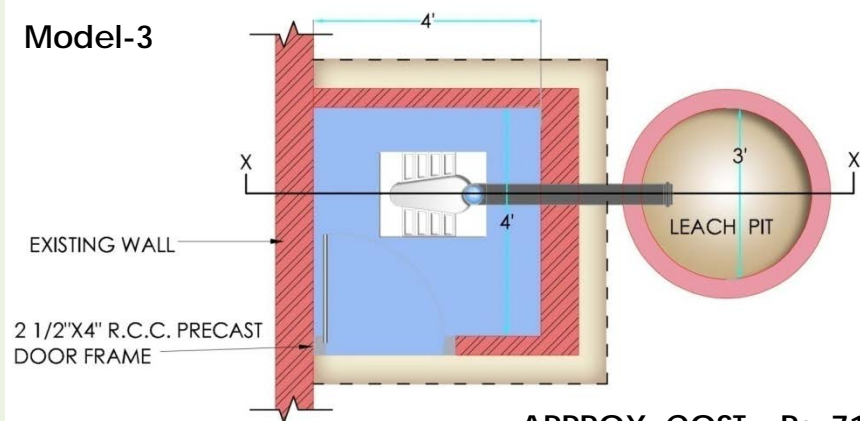
- Prefabricated pressed steel doors are more durable as compared to other types.
- It does not bend or corrugate easily.
- Asbestos sheets also require low maintenance once installed.





# DESIGNING OF MODELS OF RURAL TOILETS IN CHHATTISGARH

**Model-3**



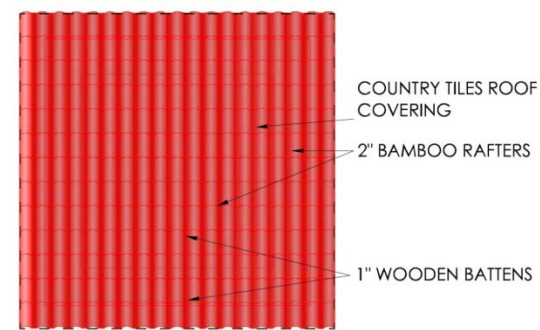
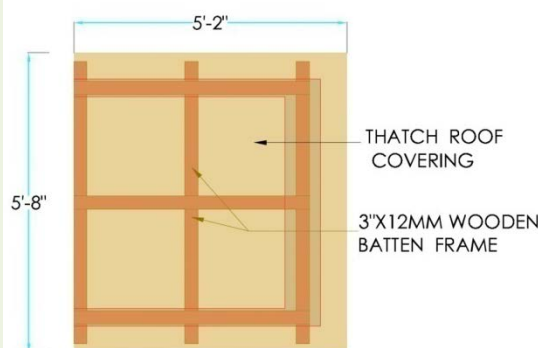
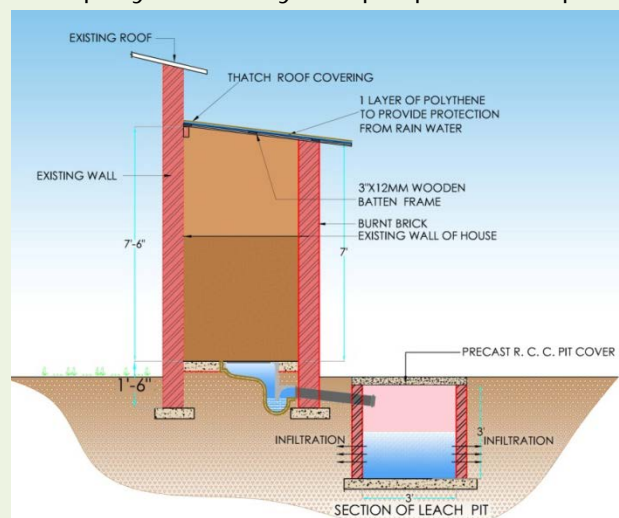
**APPROX. COST – Rs. 7100/-**

**•Brick Wall Construction.**

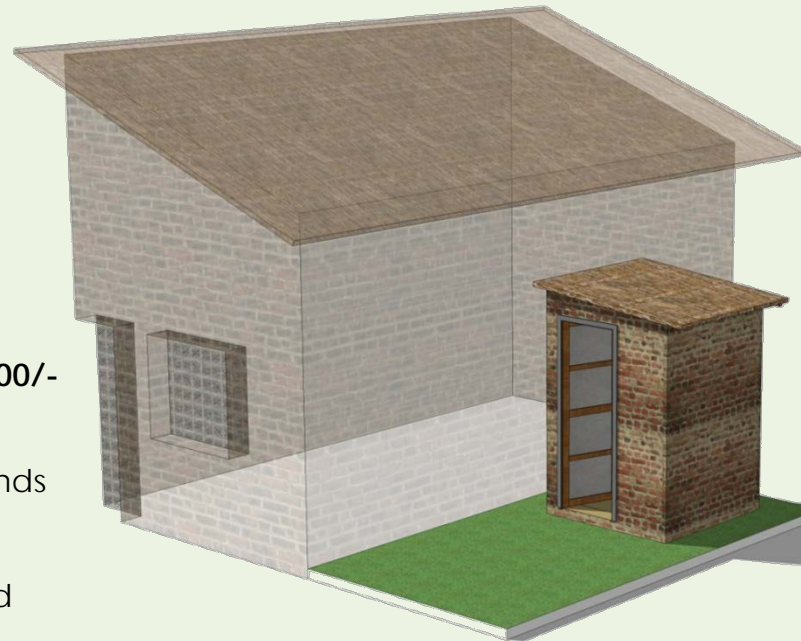
- The internal size of the toilet has been set as 4' X 4' and its designed to be an extension of an existing structure.
- A circular Leach Pit of 3' diameter has been proposed next to the toilet.
- Thatch roof resting over wooden battens has been provided for this type.
- This roofing system is beneficial in places where hay is locally available and transportation of other material is difficult.

**BENEFITS –**

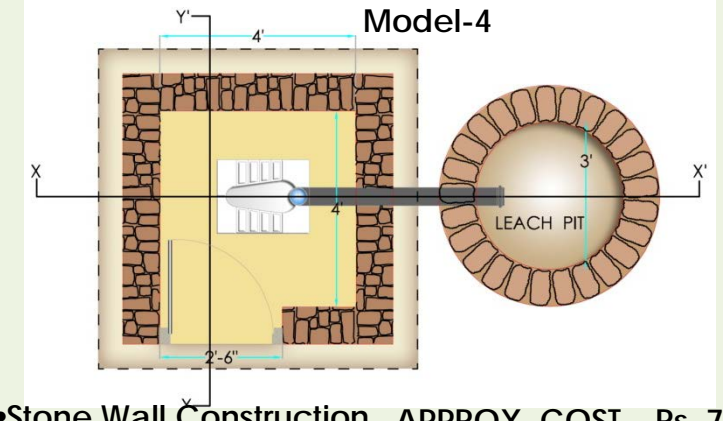
- Sloping roof provides easy drainage of water in rainy season.
- The toilet being an extension of the existing structure saves the cost of construction of the fourth wall.
- A polythene layer is proposed to protect from rain.



**Model-3**



**Model-4**

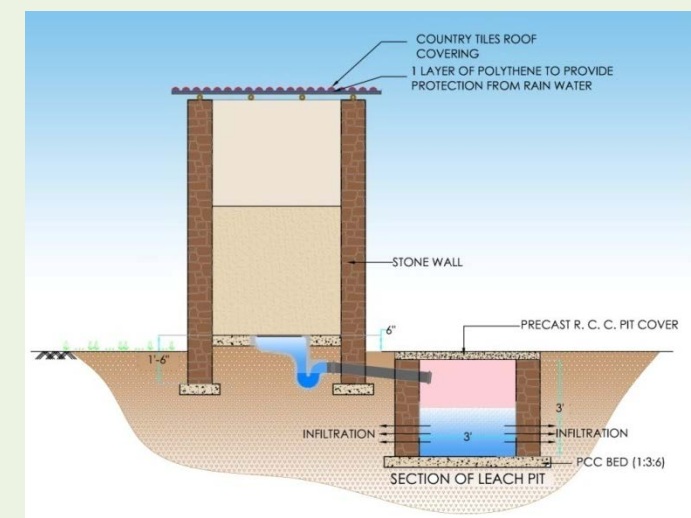


**•Stone Wall Construction. APPROX. COST – Rs. 7945/-**

- The internal size of the toilet has been kept to 4' X 4'.
- A circular Leach Pit of 3' diameter has been proposed next to the toilet.
- PCC bed is provided at the base for laying Orissa pan.
- A PVC pipe connects the Orissa pan with the leach pit.
- Total height of 7' is proposed.
- The roofing material in this type is country tiles roofing, provided with polythene layer to protect it from rain water.

**BENEFITS –**

- Mainly proposed for rural areas, where transportation is easy.
- For areas, where stone is locally available.
- Easy installation.





# DESIGNING OF MODELS OF WATER SUPPLY AND SANITATION FACILITIES AT GOVT HEALTH CENTERS IN CHHATTISGARH

The **National Rural Health Mission (NRHM)** was launched to strengthen the Rural Public Health System seeking to provide effective health care to the rural populace throughout the country.

Towards the end, the Indian Public Health Standards (IPHS) for

Sub- Centers , Primary Health Centers (PHCs), Community Health Centers (CHCs), Sub district and District Hospitals were published.

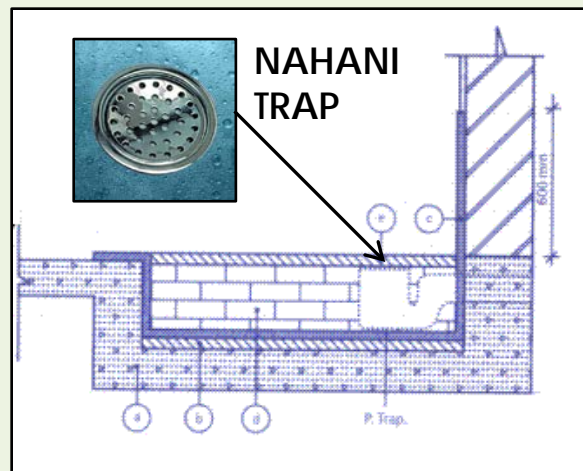


Existing health centers were studied to suggest betterment. As per the IPHS guidelines and existing conditions, some suggestions are proposed for the up gradation and betterment of the health centers.

## KEY POINTS PROPOSED :

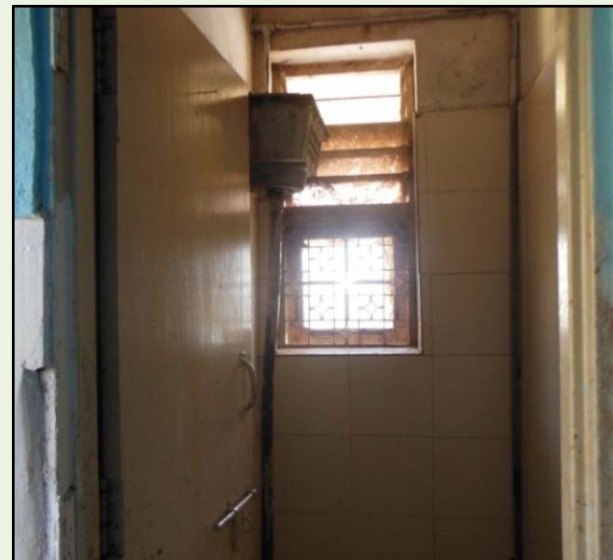
- USE OF SOLAR PANELS
- BARRIER FREE MOVEMENT
- GREY WATER RECYCLING
- PROPER SANITATION
- PROVISION OF SEWAGE TREATMENT PLANT

## PROPOSED TOILET

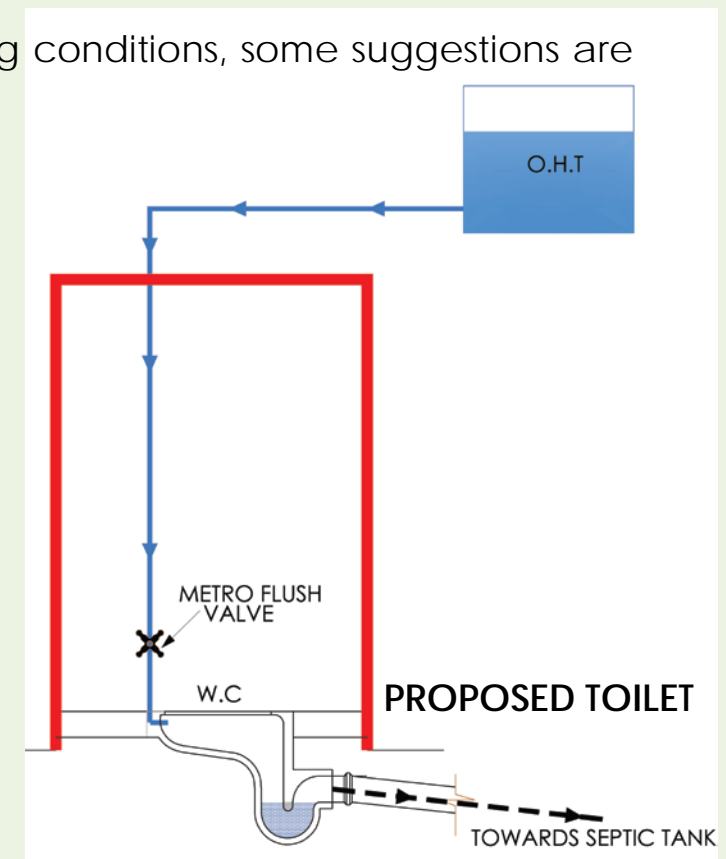


•The existing toilet lacks an efficient flushing system resulting in unhygienic conditions. Flushing cisterns require maintenance and are also have high cost of installation. Also, the exposed pipelines have a danger of vandalism.

•Proposed bathroom is to have a Nahani Trap for collection and carrying of waste water to the nearest drain line.



EXISTING TOILET



## PROPOSED METRO FLUSH

Metro flush is proposed for the toilets. The water supply pipeline is of 1.5 inch thick and water flows directly from an over head tank through a concealed pipeline.



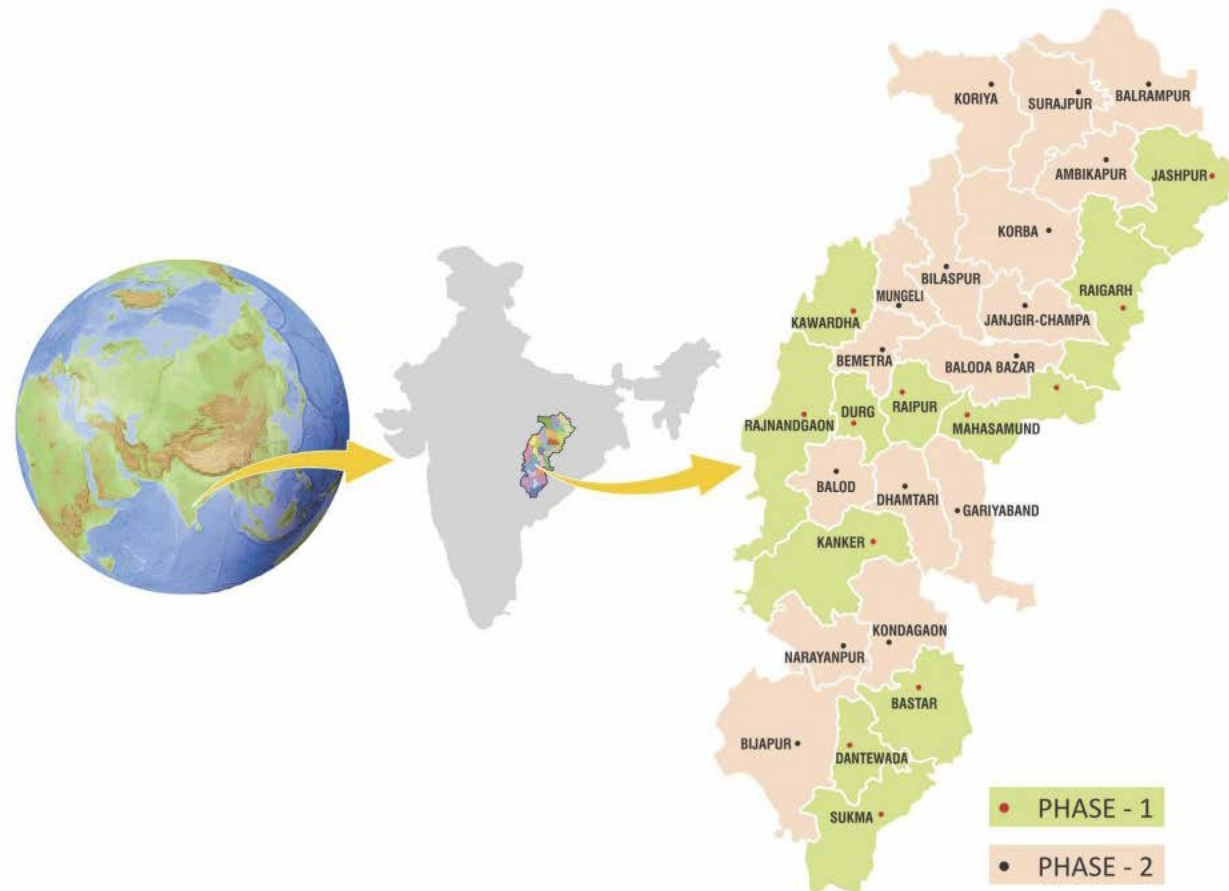
# PROPOSED HOUSING SCHEME "ATAL VIHAR YOJNA" FOR CGHB AT CHHATTISGARH

In Chhattisgarh state, due to the ever increasing demand of integrated township, about 1,00,000 residential units are to be constructed in cities, industrial areas by **CHHATTISGARH HOUSING BOARD**. The state government launched a scheme for the integrated development of new residential hubs across the state under "**ATAL VIHAR YOJNA**". The scheme is named after the former prime minister Sri Atal Bihari Vajpayee Ji. In the scheme, 85% of residential units is reserved for the economically weaker section.

The main objective for the scheme is to provide good quality residences to Lower Income Group and Economically Weaker Section. To provide them with the affordable housing. The government has proposed subsidies for them. These townships are proposed near the industrial settlements, villages and tehsils.

TYPOLOGY AND PLANNING OF DIFFERENT UNITS ARE FIXED. FOLLOWING TYPE OF UNITS ARE PROPOSED:-

- HIG I & II (13.0MX18.0M)
- MIG SR. I & II (11.50X16.50)
- MIG JR. I & II (9.50X14.75)
- LIG I & II (8.00 X 12.00)
- EWS I & II (4.50X9.00)
- MIG APARTMENT
- LIG APARTMENT
- EWS APARTMENT



## Sites –

### Rajnandgaon Division

- Mainpuri
- Pendri

### Jagdalpur Division

- Chittanlanka
- Chokawada

### Sukama Division

- Sukama

### Kanker Division

- Shriram nagar

### Durg Division

- Parsada

### Raipur Division

- Aarang

### Mahasamund Division

- Machewa Road
- Khairmal

### Bhatapara Division

- Baloda Bazar

### Raigarh Division

- Sarangarh

### Bilaspur Division

- Chilhathi

- Mungeli

### Abhanpur Division

- Urla





# PROPOSED HOUSING SCHEME "ATAL VIHAR YOJNA" FOR CGHB AT CHHATTISGARH

## LAYOUT PLAN

The proposed site is located at chilhati village near bilaspur. The site has an area of 43.41 acres approximately. It has to be planned under the **ATAL VIHAR YOJNA** scheme. It is planned in two phases, one is for plotted housing and another is for apartments. Thus bifurcated by a 18.0 m wide road. Amenities like school, commercial, health centers are placed along 12.0 m wide road. Apartments are placed near the pond following the hierarchy firstly MIG flats, LIG flats and EWS flats at the extreme corner.



### INDEX

- HIG
- SR.MIG
- JR.MIG
- LIG
- EWS
- MIG APARTMENT
- LIG APARTMENT
- EWS APARTMENT





# PROPOSED HOUSING SCHEME "ATAL VIHAR YOJNA" FOR CGHB AT CHHATTISGARH

•This site is located at the Baloda Bazar District near Arjuni village. It has plot area of 14.99 acres approximately. The site has plotted housing as well as bungalows. The plot has a single 18.0 m wide road connecting to the main road. HIG bungalows are planned facing the main road. The hierarchy is maintained in placement of MIG and LIG plots. Central garden space is provided equally accessible to all.



## LAYOUT PLAN



•This site is located at Pendri Village of Rajnandgaon Division. It has approx area of 17.4 acres. The site planning concept is similar to the above two. With EWS flats located at the rear end. Amenities placed along the 12.0 m wide road. HIG and MIG plotted housing with LIG flats. The apartments are G+3. A canal is flowing adjacent to the site so a buffer zone as per the norms of Town and Country Planning Department of Chhattisgarh is proposed.



# PROPOSED ENGINEERING COLLEGE AT NOWGONG, CHHATTARPUR BHOPAL (M.P.)

## DESIGN IDEA AND ZONING

### CIRCULAR SETTLEMENT PATTERN

- The street pattern of a settlement where a number of roads radiate from the centre and are cut through by a series of circular roads which form rings round the centre.
- With the main focal point as the academic which is the center of the sites and connect the different spaces with pedestrian pathways.
- As this design is circular all the roads radically connect to the central green which made circulation on the site so easy.

### ZONING

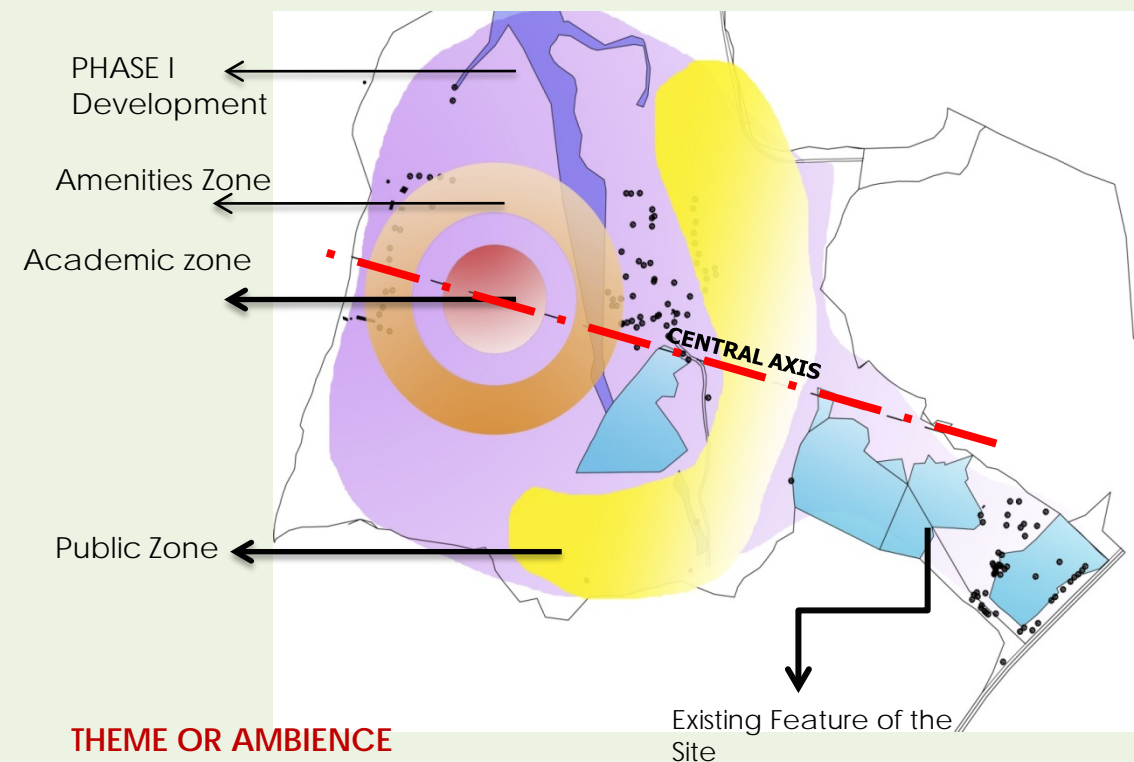
Planning of the site has been made to have different kind of zones in a concentric circle with the center zone as a big open space. Other zones are Academic, Recreational And Residential..

### BASIC APPROACH

- The design of college should serve as an island of excellence.
- College must be functionally planned, well lighted and ventilated.

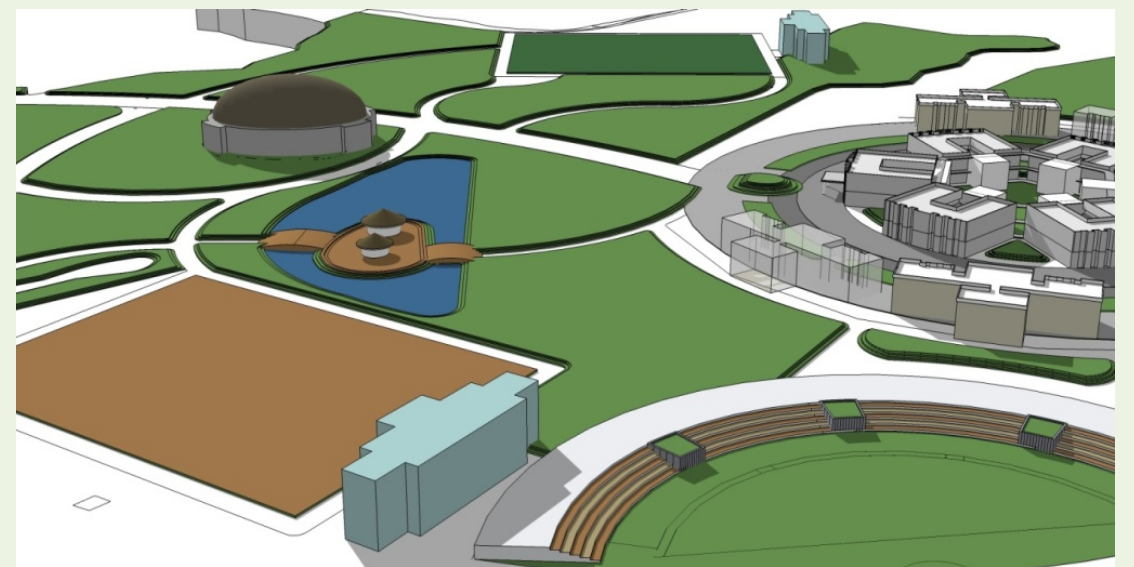
### ZONING/SITE PLANNING

- Objective is to create visible and invisible system of Buildings, Landscaped Spaces, Movement Pattern and Services that are completely Integrated And Related.
- The spaces between Different Buildings should be designed to provide areas where student may congregate informally for discussions
- The campus design should facilitate students to have a balance between their personal and public life.



### THEME OR AMBIENCE

- It should be calm, serene and comfortable oasis.
- Campus should be a unified cluster of buildings with intimate pedestrian open spaces providing unique environment for living and studying.
- It should be more like residential suburb or park rather than a city.



- Academic area acts as the core area for the supporting peripheral activities.
- Natural water bodies are retained, as they cool the wind.



# PROPOSED ENGINEERING COLLEGE AT NOWGONG, CHHATTARPUR BHOPAL (M.P.)

## SITE PLAN



- Zoning of the site is divided in to two zones as phase 1 & phase 2 .
- Phase 1 is located near the main entrance of the site for the easy accessibility of the people.

- As the site has very less frontage, and development for Phase 1 is proposed near the approach road , so the main building should be an iconic building for the onlookers and visible from the road.
- Zoning is done along the central as well as the radial axis.



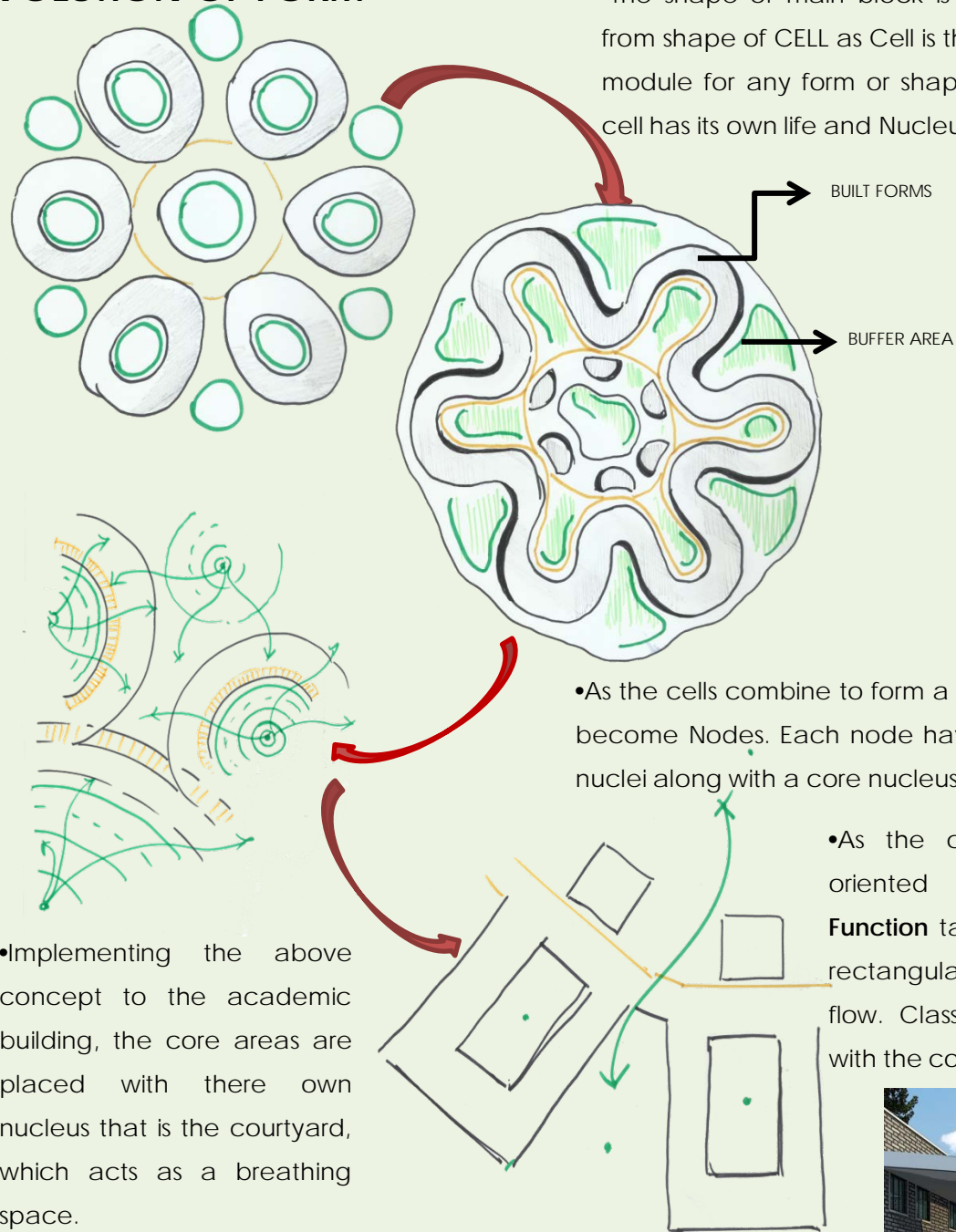
- As the planning is proposed in a regular chunk thus, leaving the maximum area left for the future expansion.
- All the existing site features like Nala, Pond, Trees, temple are taken in due consideration while zoning.





# PROPOSED ENGINEERING COLLEGE AT NOWGONG, CHHATTARPUR BHOPAL (M.P.)

## EVOLUTION OF FORM



## ACADEMIC BLOCK

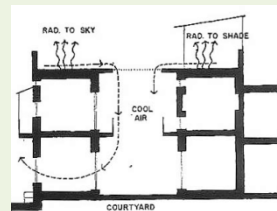
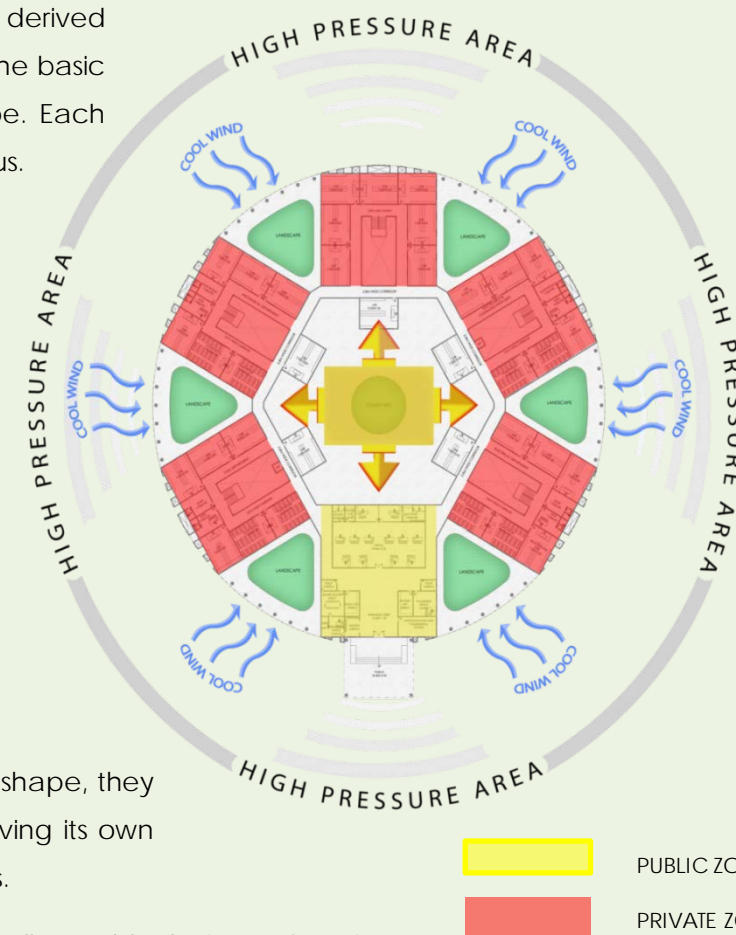
### ENCLOSED DESIGN

The main concept of the design was to have Enclosed Design where building have their own Private Courtyards, Internal Circulation and Internal Innovative Spaces.

### ZONING

Zoning of the building has been done in a systematic way so that each zone doesn't mix with other zone and they can retain their identity by itself. Zoning of the building has been divided into three zones . i.e. office blocks ,departments, and common functions

- Zoning start with the Public Zone which consist of areas like Reception ,Administrative Office ,Account Office etc.
- the Second zone which is Private Zone which consist of different departments of Engineering this area was especially designed for the students and teachers. This zone consist of different kind of interesting spaces where student can enjoy and sit.
- Last zone comprises of laboratories, workshops.



### NATURAL VENTILATION

- Outdoor breezes create air movement through the house interior by the 'push-pull' effect of positive air pressure on the windward side and negative pressure (suction) on the leeward side.
- In order to have a good natural ventilation, openings is placed at opposite pressure zones
- Also, to enhance natural ventilation using tall spaces called stacks in buildings.
- With openings near the top of stacks, warm air can escape whereas cooler air enters the building from openings near the ground.

### COURTYARD

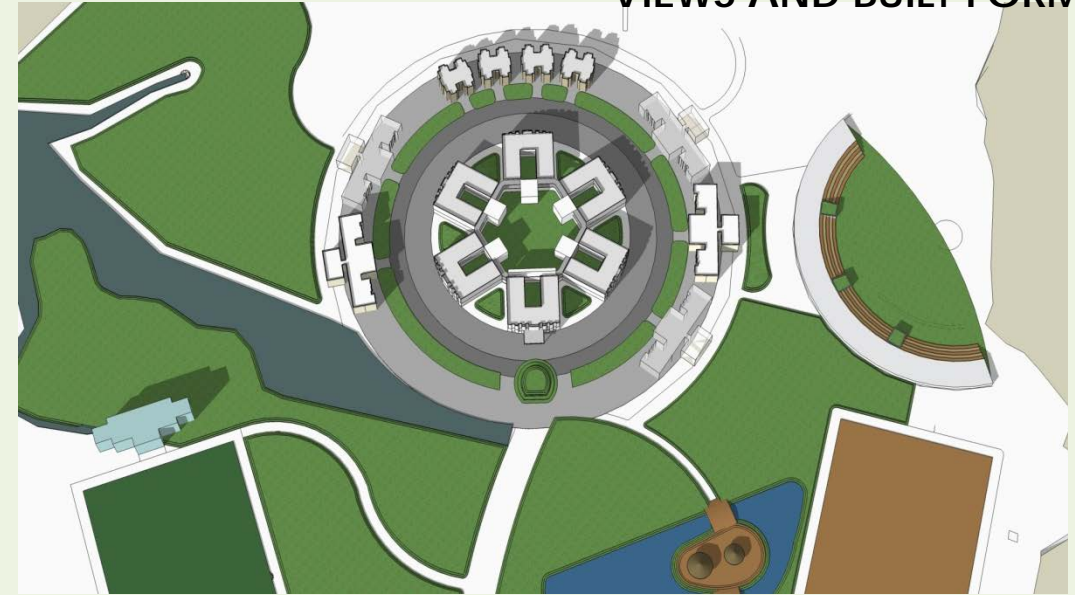
- Due to incident solar radiation in a courtyard, the air gets warmer and rises.
- Each wing has been planned with courtyards.
- They serve as semi open spaces.
- It has been designed as it can also be well used as Recreational Spaces.





# PROPOSED ENGINEERING COLLEGE AT NOWGONG, CHHATTARPUR BHOPAL (M.P.)

## VIEWS AND BUILT FORM



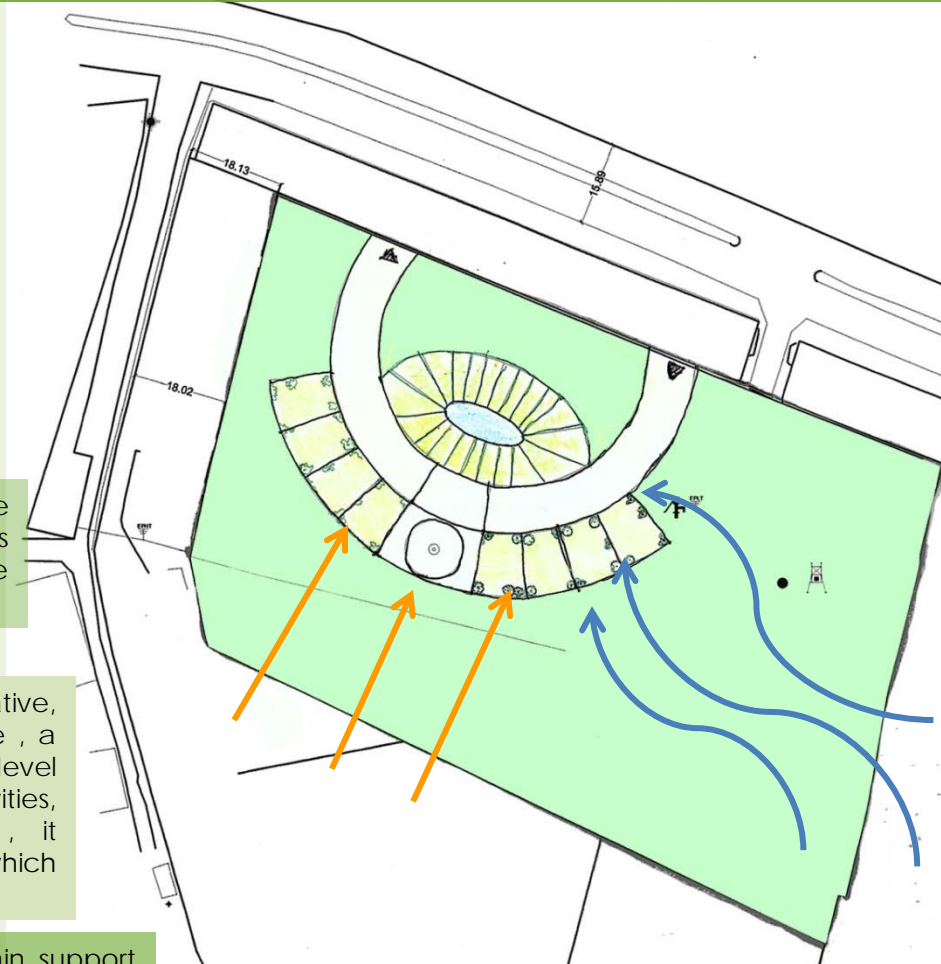


# PROPOSED STATE GUEST HOUSE AT BHOPAL (M.P.)

## SITE ANALYSIS:-

### KEY FEATURES –

- The proposed site is located at link road no. – 3.
- The site area has approx 3.02 acres.
- The site is north facing.
- There are some existing sheds on the site.
- There is a H.T. Line on the site.
- The site has existing thick vegetation.
- A transformer is located at the north eastern side.
- Adjacent to the site, on the southern side, land is reserved for Revenue Department



## Built Form And Placement

As the site has an advantage of the maximum frontage, the building is placed along the main road. As the character of the building requires the privacy, security and comfort. So a single block is proposed, so that security, being the top priority can be easily provided. As per the site conditions i.e. Due to existing transformer and H.T. line, the most suitable form is longitudinal. So, a curvilinear built form is proposed which engulfs maximum diffused light due to north facing .

The main building of guest house is designed as the tree. Trees, being the integral part of Indian history and culture. Trees are best symbolic example for hierarchy, it symbolizes the importance of hierarchy and interrelationship of different levels. The stem of the tree acts as the connecting shaft for different levels. Guest house, The placement of different requirements is taken from the different levels of trees.

Top level being the delicate part, is taken as the service core, which requires more attention.

As this part is out of reach, and important, so ,this level includes the VVIP rooms and VIP rooms, as per the hierarchy.

This part is mixed with leaves and flower, so this level includes officers rooms along with some common amenities.

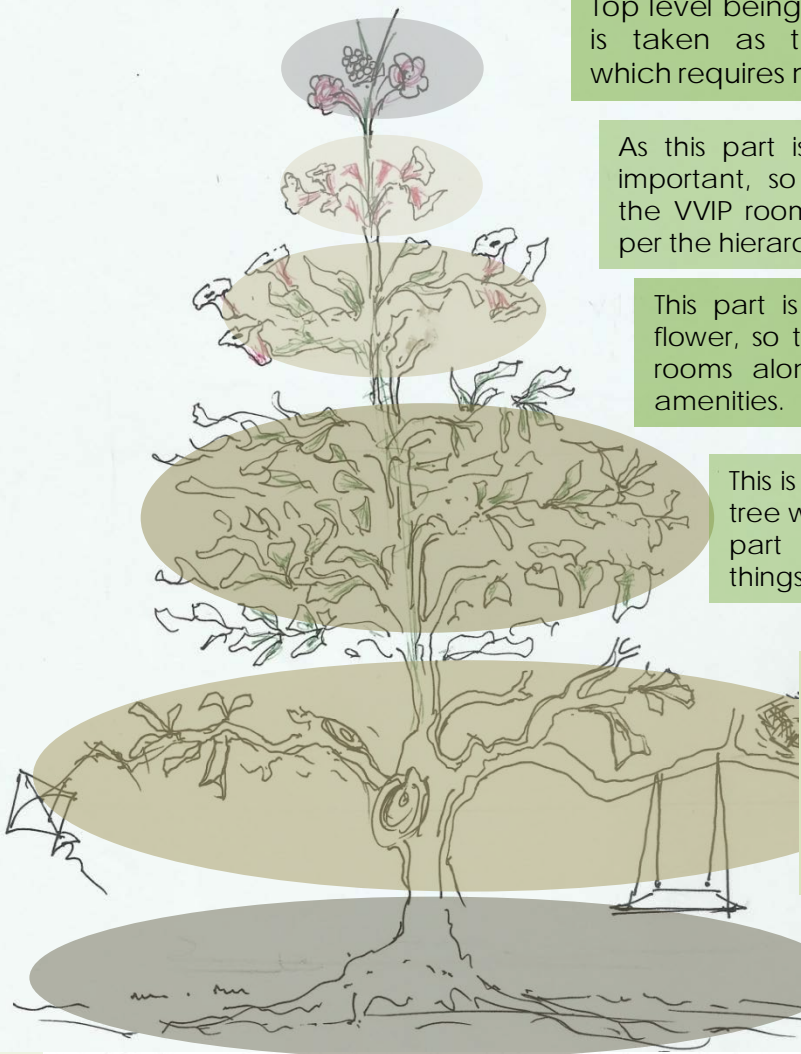
This is the most common part of the tree which constitutes leaves, so this part includes the multi purpose things along with the services,

As the sketch itself is illustrative, this part of tree has a kite , a swing and nest. So lowest level houses recreational activities, like banquet hall, also , it includes the meeting hall, which has the public accessibility.

The lowest level is the main support system , that is roots. So this level includes, supporting staff dormitories, parking and other services.

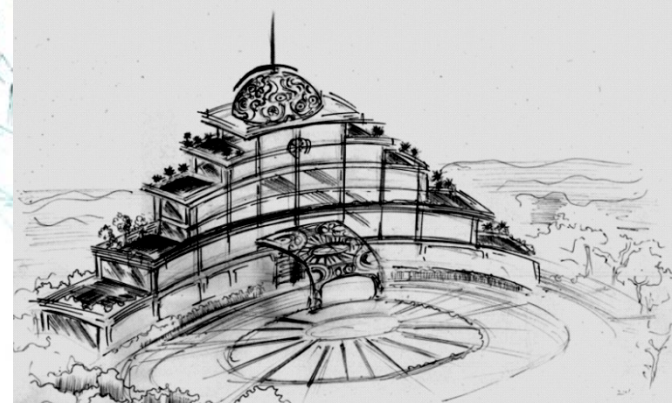
## ... DESIGN CONCEPT

The State guest house reflects a state's culture as well as heritage. So along with all the modern amenities, It is important that the building has a character.

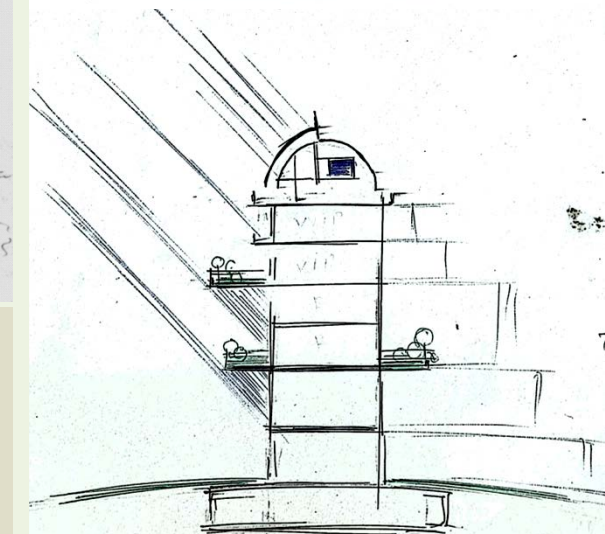
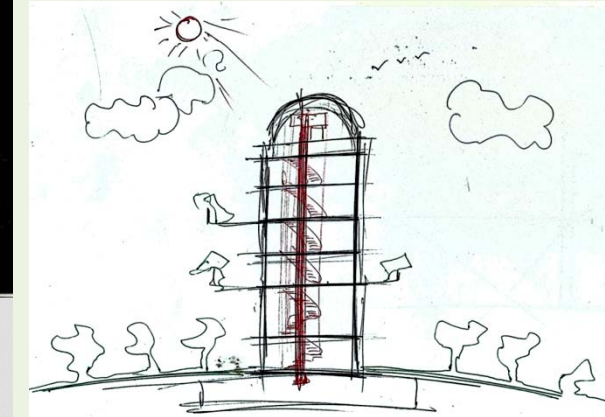




# PROPOSED STATE GUEST HOUSE AT BHOPAL (M.P.)



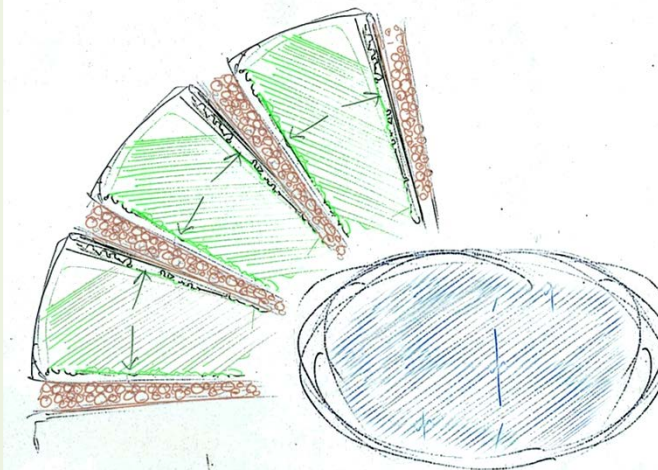
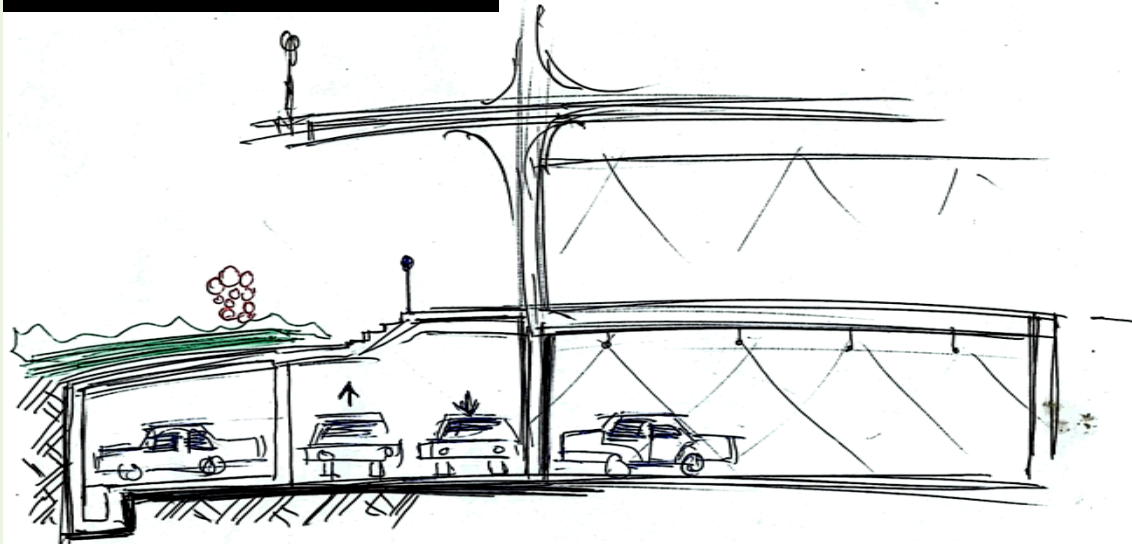
Section showing the central service core and dome. Due to terrace garden, the wind cools considerably, before entering building.



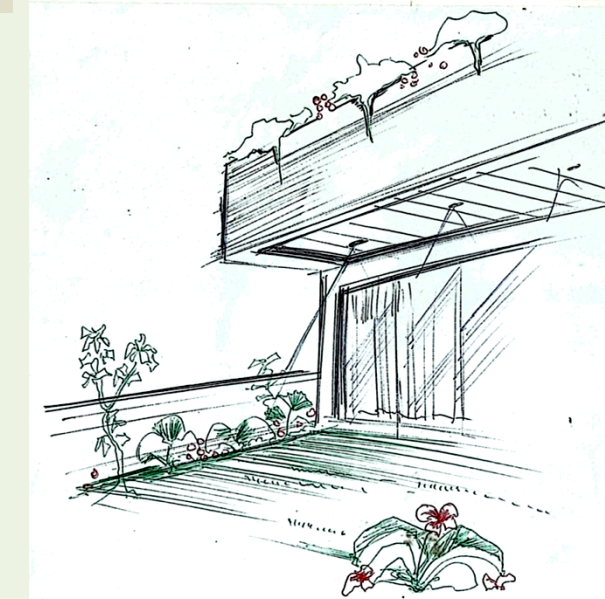
Development of built form is focused on achieving maximum efficiency of space usage in a minimum coverage. Building is planned in flexible grids. The curvilinear exterior façade visually makes an impact on the visitors, hence depicting the its grandeur and importance. A dome is proposed at the top of the building. This feature embarks an importance to the building. The dome is designed in two parts, inner core is RCC which is also the service core, having lift rooms, water tanks. The outer core, is steel roof, on which hexagonal **Solar Photovoltaic panels**. The solar cells are placed only on the southern side.

A central water body is proposed. Serves both as an aesthetic element as well as percolation pit, reducing the hard paving and inducing more soft paving to increase ground water. Also gravel linings are provided which helps in channelizing rain water. The slope of the green area is towards the gravel channels. Soil traps are provided to check on the soil erosion.

## SECTION THROUGH BASEMENT



A basement parking along with the open parking is proposed. The basement parking is kept for VVIP Guest, so that they can directly approach their vehicle. An Extended basement is proposed. A central driveway with parking on both the sides. Also, fire fighting system is given due consideration as the building is of high importance.



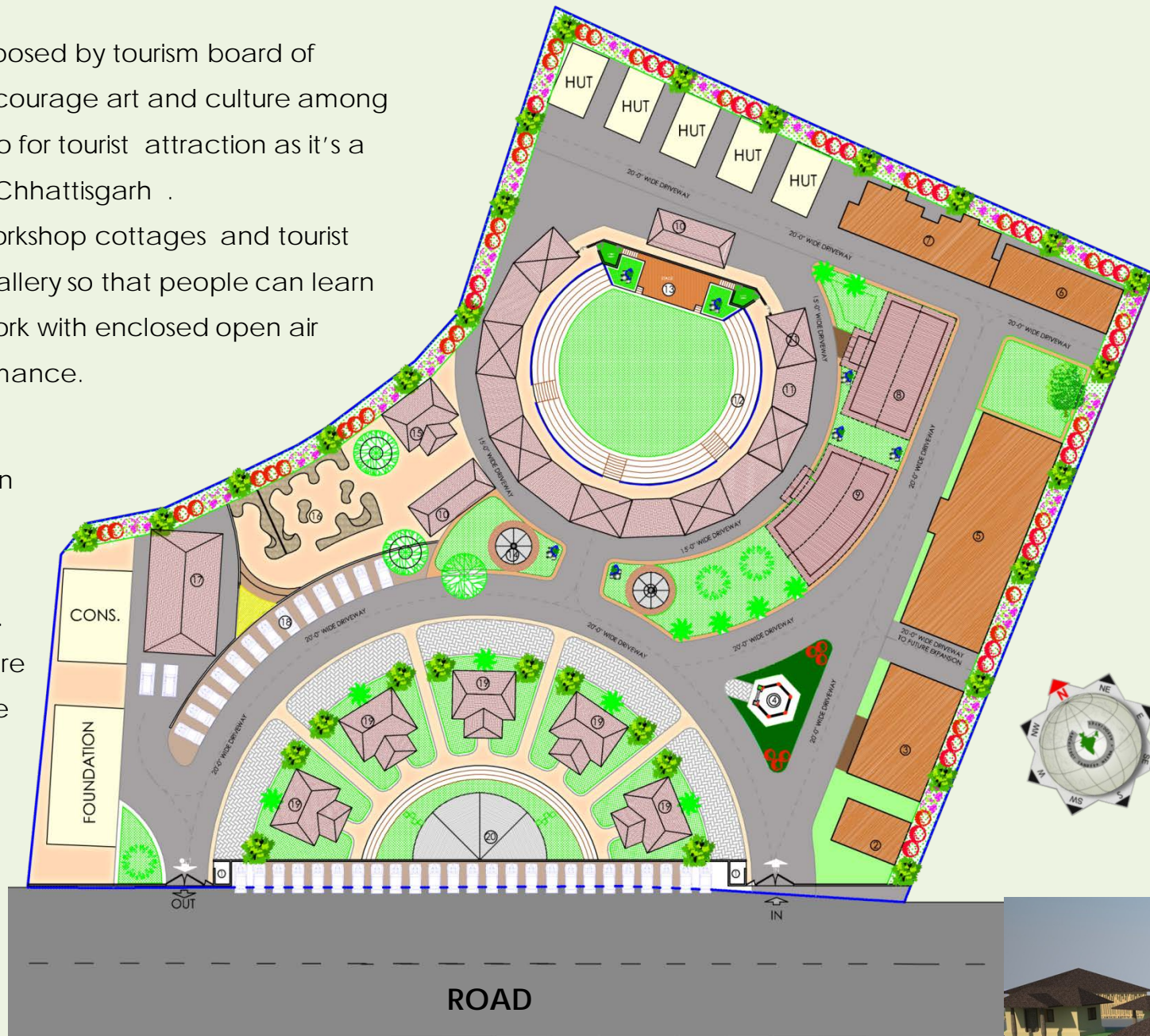
Overlooking in terraces is stopped by providing heightened parapet walls with railings on the other sides. So that privacy is not disturbed.



# PROPOSED CRAFT VILLAGE AT KONDAGOAN , CHHATTISGARH

## SITE PLAN

- Craft village is proposed by tourism board of Chhattisgarh to encourage art and culture among the people and also for tourist attraction as it's a main hub of art in Chhattisgarh .
- Its comprises of workshop cottages and tourist cottages with art gallery so that people can learn and display their work with enclosed open air theatre , for performance.
- The food court is clubbed in between accommodation cottages as well as workshop cottages.
- Informal seatings are provided, giving the ethnic feel to the occupants.



### LEGEND

1. Guard room.
2. Emporium
3. Interpretation Center and Exhibition hall
4. Devgudi
5. Training center & hostel
6. Staff residence-1 BHK
7. Staff residence2 BHK
8. Activity hall2
9. Activity1
10. Toilet
11. Workshop cottages
12. Open air theater
13. Stage
14. Gazebo
15. Kitchen
16. Food Court
17. Raw Material Store
18. Parking
19. Cottages
20. Recreational
21. Spaces



- A training centre with the hostel is located near interpretation centre , giving its required segregation from day today crowd

### ARIAL VIEW



- Emporium building is proposed , right at the entrance for easy access to the by pass.
- A devgudi is proposed at the entrance itself , as it is symbol of faith for local people.

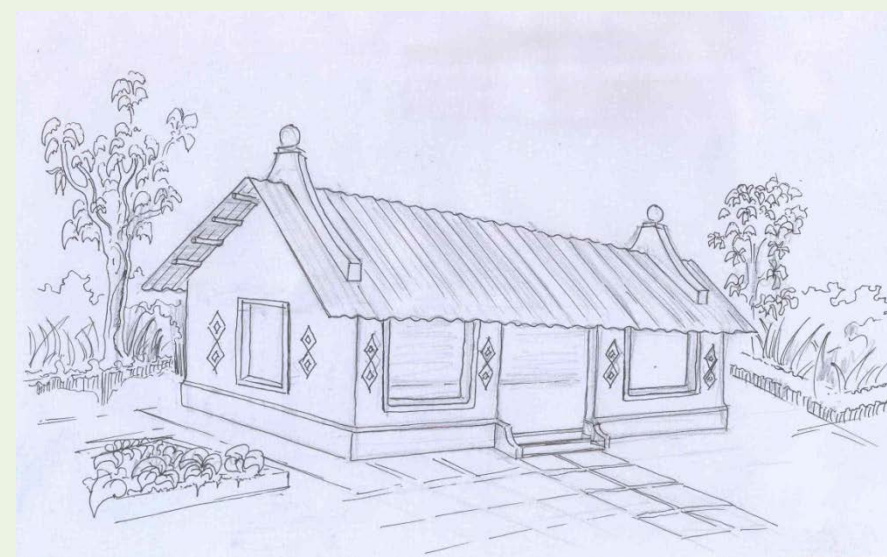


# PROPOSED CRAFT VILLAGE AT KONDAGOAN , CHHATTISGARH

## CONCEPTUAL VIEW

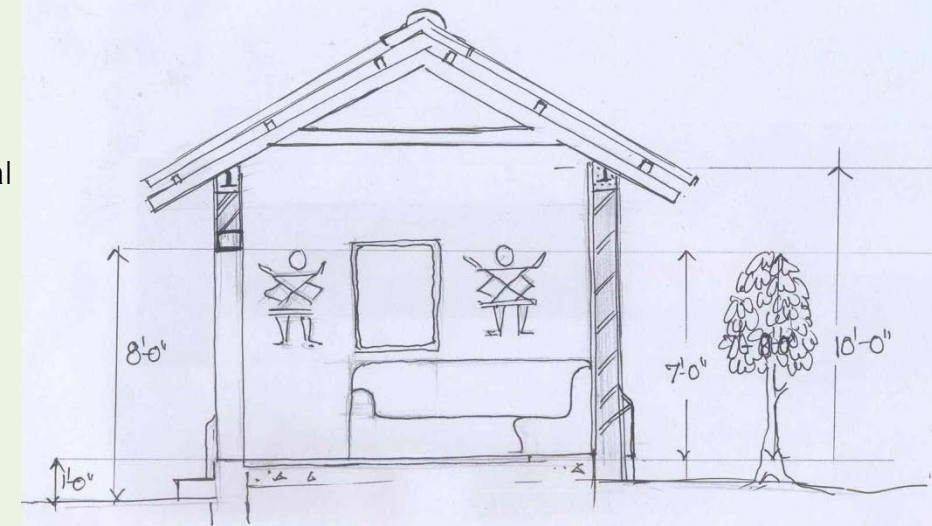


**WORKSHOP COTTAGES WITH CENTRAL OPEN AIR THEATRE**



- Cottages are ground floor structure have well connectivity with the nature.
- Local material is use for construction.

- All cottages are placed facing the central recreational space.
- Wall are adorned with the local painting and murals.



**VIEW SHOWING FOOD COURT SEATING**

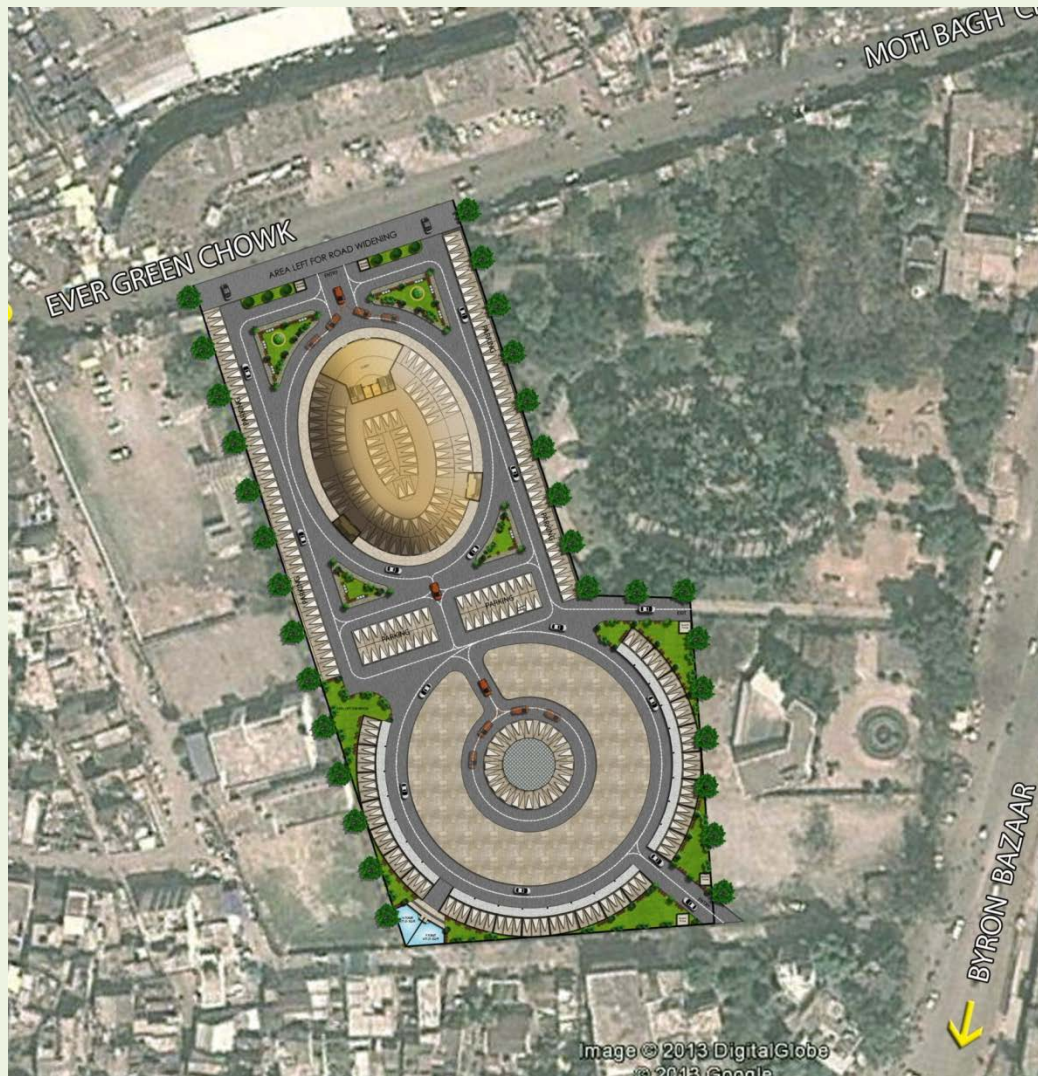
- A kitchen and common toilet block is also provided.
- Between workshop cottages & tourist cottage, Food Court is provided for the easy access of the people.



**CLUSTER VIEW OF TOURIST COTTAGES**



# PROPOSED ART AND CULTURAL CENTER AT MOTIBAGH, RAIPUR (C.G.)

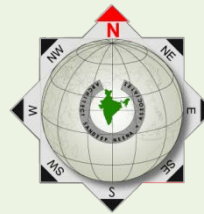
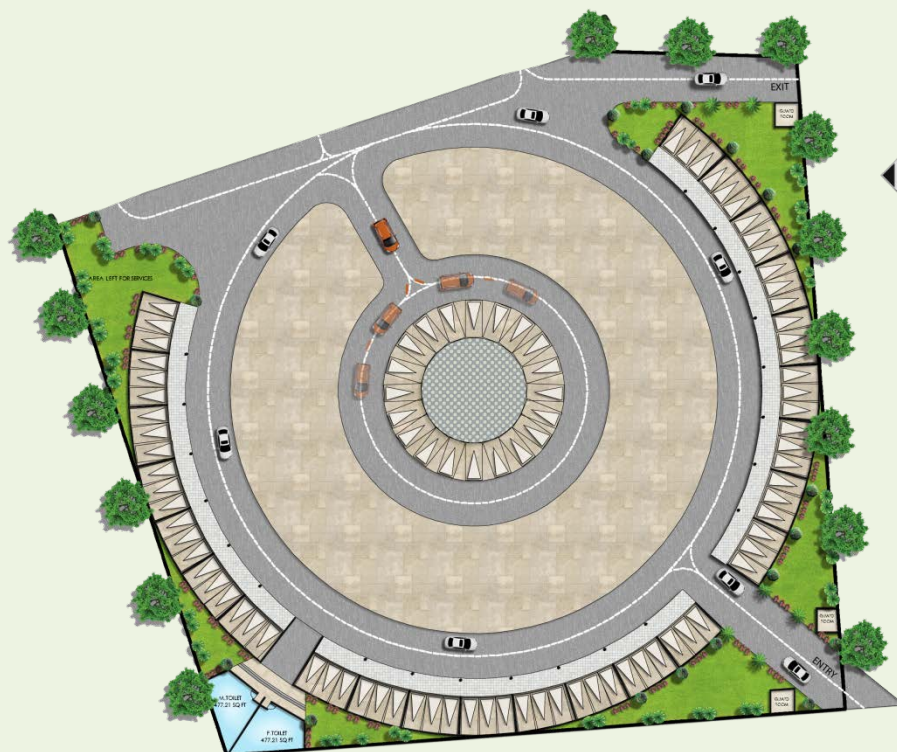


- The city is really in need of a well facilitated performing art centre.
- The existing ART & CULTURAL CENTRE in the town were constructed long time back eg:- **RangMandir** , **Medical College** and **Shaheed Smarak** are the present setup in the town for performing art and cultural activities ,but they are all lacking in some or the another way ,like medical college auditorium is for their use , some have parking capacity problem, some are not equipped well etc.

Proposing an **ART & CULTURAL CENTRE** at **MOTI BAGH** area will attract the town as is located at the heart of the city. Auditorium is proposed to have 1000 seats, with 750 seats at one level and 250 seats at Balcony level.

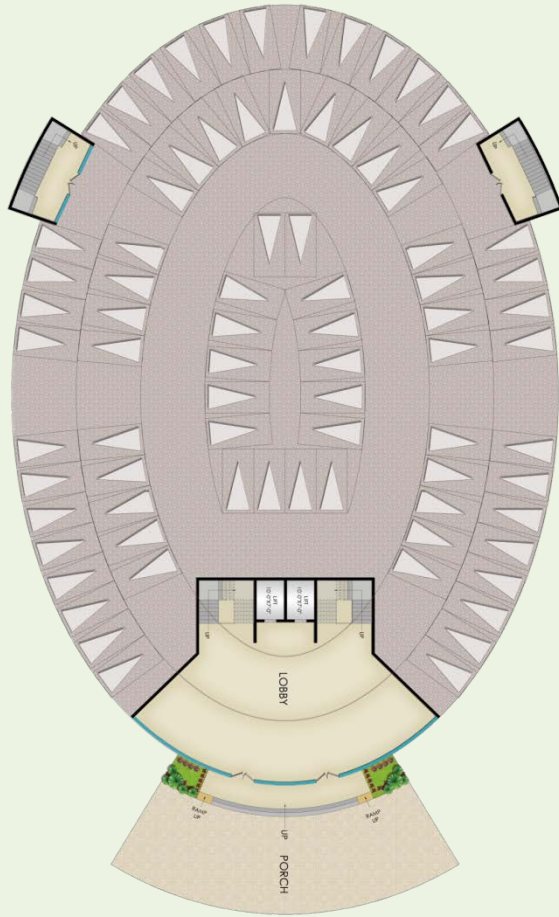
## KEY POINTS

- The overall geometry of the art and cultural centre is been maintain.
- Road widening is proposed at the entrance of the auditorium.
- Exhibition centre is proposed behind the press club.
- Sufficient parking is been provided.
- The auditorium form is an Organic Form and it has Contemporary Style of architecture with all Modern Amenities and Facilities.
- It has well equipped stage setup.
- The inner space of auditorium has designed with all acoustical consideration.
- Shed space is designed with the Flexible Grid which can be used for exhibition area as well as parking as per requirement .
- Central portion of exhibition spaces can be converted Into open air theatre as the requirement arises.
- Toilet blocks are also proposed at the corner for the users.

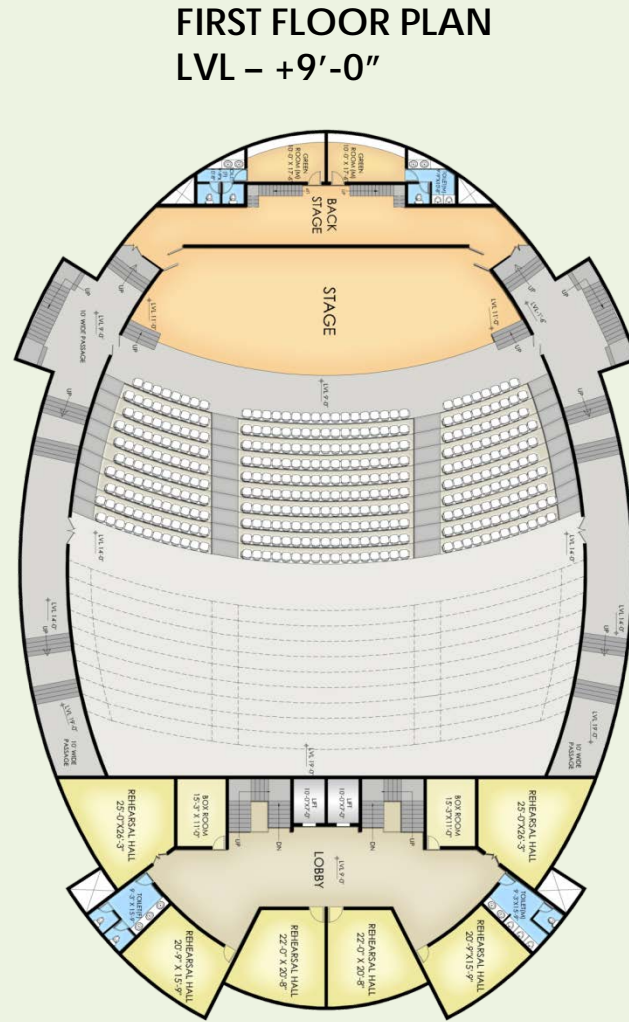




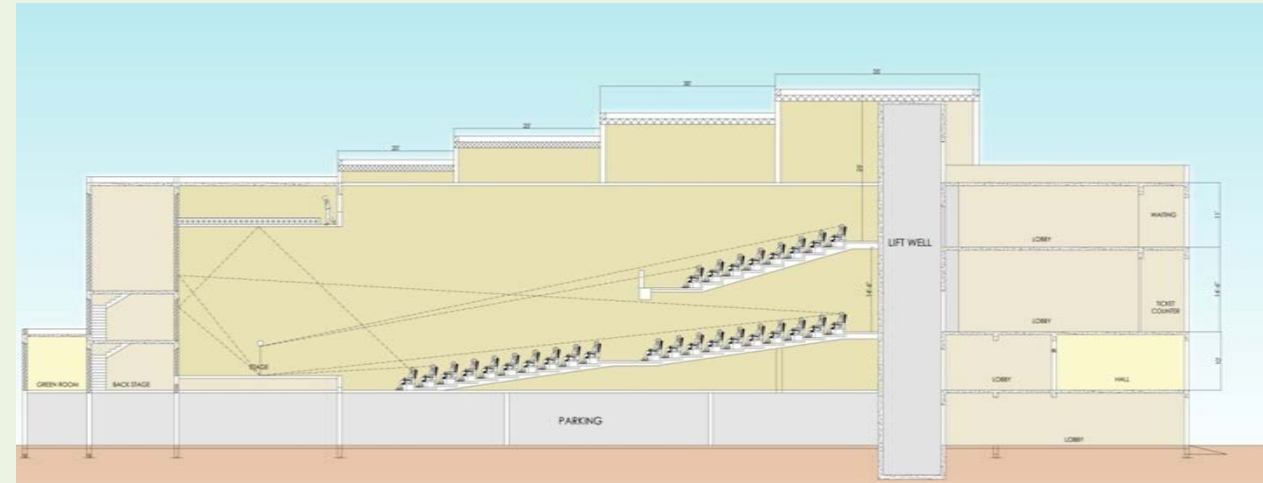
# PROPOSED ART AND CULTURAL CENTER AT MOTIBAGH, RAIPUR (C.G.)



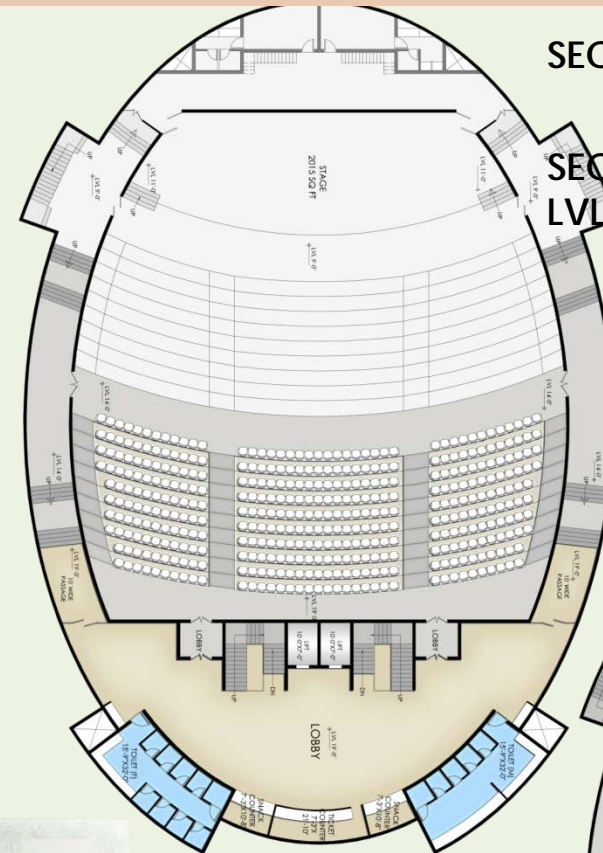
**GROUND FLOOR PLAN  
LVL - 0.0**



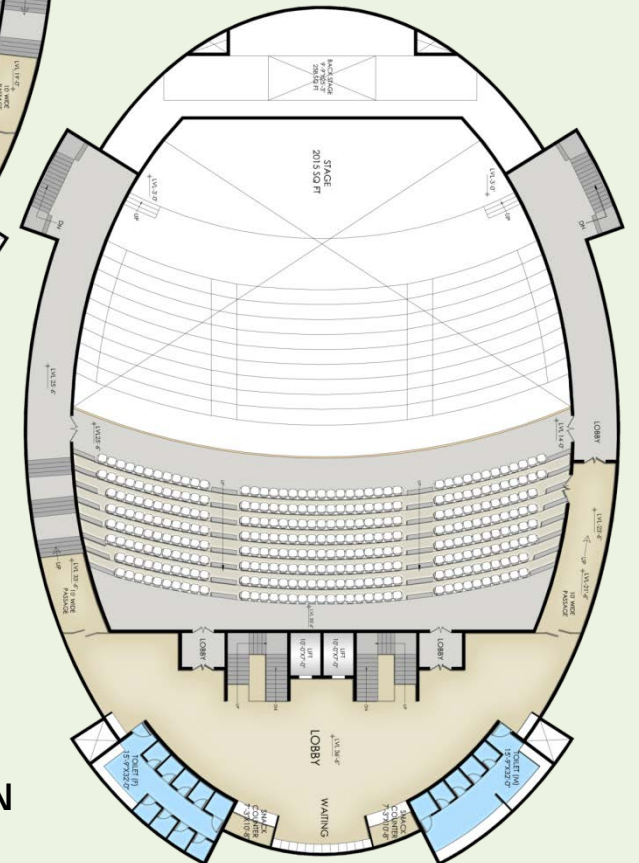
**FIRST FLOOR PLAN  
LVL - +9'-0"**



**SECTION**



**SECOND FLOOR PLAN  
LVL - +19.0**



**THIRD FLOOR PLAN  
LVL - +33'-6"**

BASIC CONCEPT IS TO FORMULATE A DESIGN WHICH IS THE REPLICA OF ART AND CULTURE. HAVE A INDIVIDUAL STYLE WITH ALL MODERN AMENITIES AND FACILITIES.





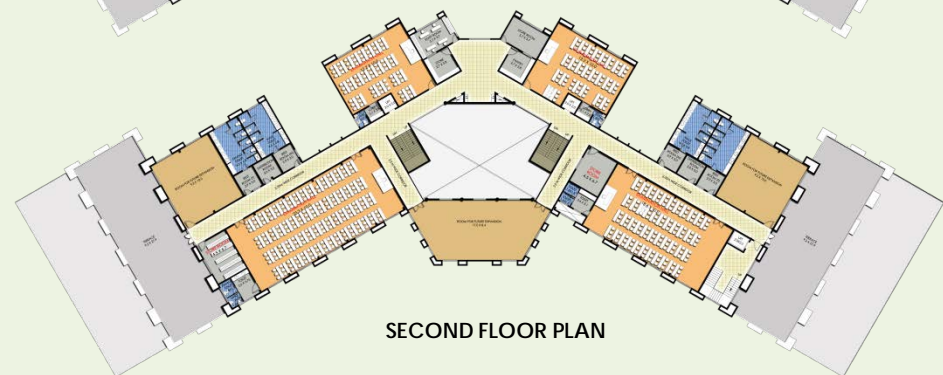
# PROPOSED AYUSH & HEALTH SCIENCES UNIVERSITY OF CHHATTISGARH AT NAYA RAIPUR

## SITE PLAN

AYUSH UNIVERSITY was established in 2009 as a Constituent College of University of CHHATTISGARH. At present, the University is functioning at Ayurvedic college premises. A new site of 18 Ha Approx is allotted for the university campus at Naya Raipur. The new campus is provided with the Administrative, Academic as well as accommodation facilities for staff & students. A Herbal Garden is also proposed at the site nearer to the pond.



### ADMIN BLOCK



### EPIDEMIOLOGY BLOCK/TEACHER'S TRAINING BLOCK





### VIEW OF ADMINISTRATIVE BLOCK

**ADMINISTRATIVE BLOCK** is the key block for the site. Therefore, strategically placed at the entrance. The block is planned with courtyards which creates an ambience for the students. It is designed with central courtyard which provides natural light and ventilation. It control the micro climate of the building. It comprises of Admin Department, Meeting Hall, Library, Lecture Halls in the ground floor while Upper Floor Consist of Examination Cell, Staff Hall, Evaluation Hall Etc. It houses the cabins of Vice Chancellor, Chancellor and Accounts Department.



### VIEW OF EPIDEMIOLOGY BLOCK

#### EPIDEMIOLOGY BLOCK & TEACHERS TRAINING

**BLOCK** is designed with central courtyard which provides natural light and ventilation. It comprises of Conference Hall, Auditorium, Library, Lecture Hall, Seminar Hall & Upper Floor Consist of Faculty Hall, Clinical Epidemiology Lab, Field Epidemiology Wind Etc.





# PROPOSED GIRLS HOSTEL AT PT.R.S.S.U., RAIPUR, CHHATTISGARH

The proposed project is to design a **Girls Hostel At Pandit Ravi Shankar Shukla University campus**. The requirement is to design 100 bedded hostel with a combination of both 2 bedded and 4 bedded rooms. The client for the project is University and the Executing Agency is Public Works Department, Chhattisgarh.

## ENCLOSED DESIGN

The main concept of the design was to have enclosed design where building have their own private courtyards, internal circulation and internal innovative spaces. These kind of design are complete by itself. They are designed like that so they can be placed anywhere or any shape of site without changing their internal layout.

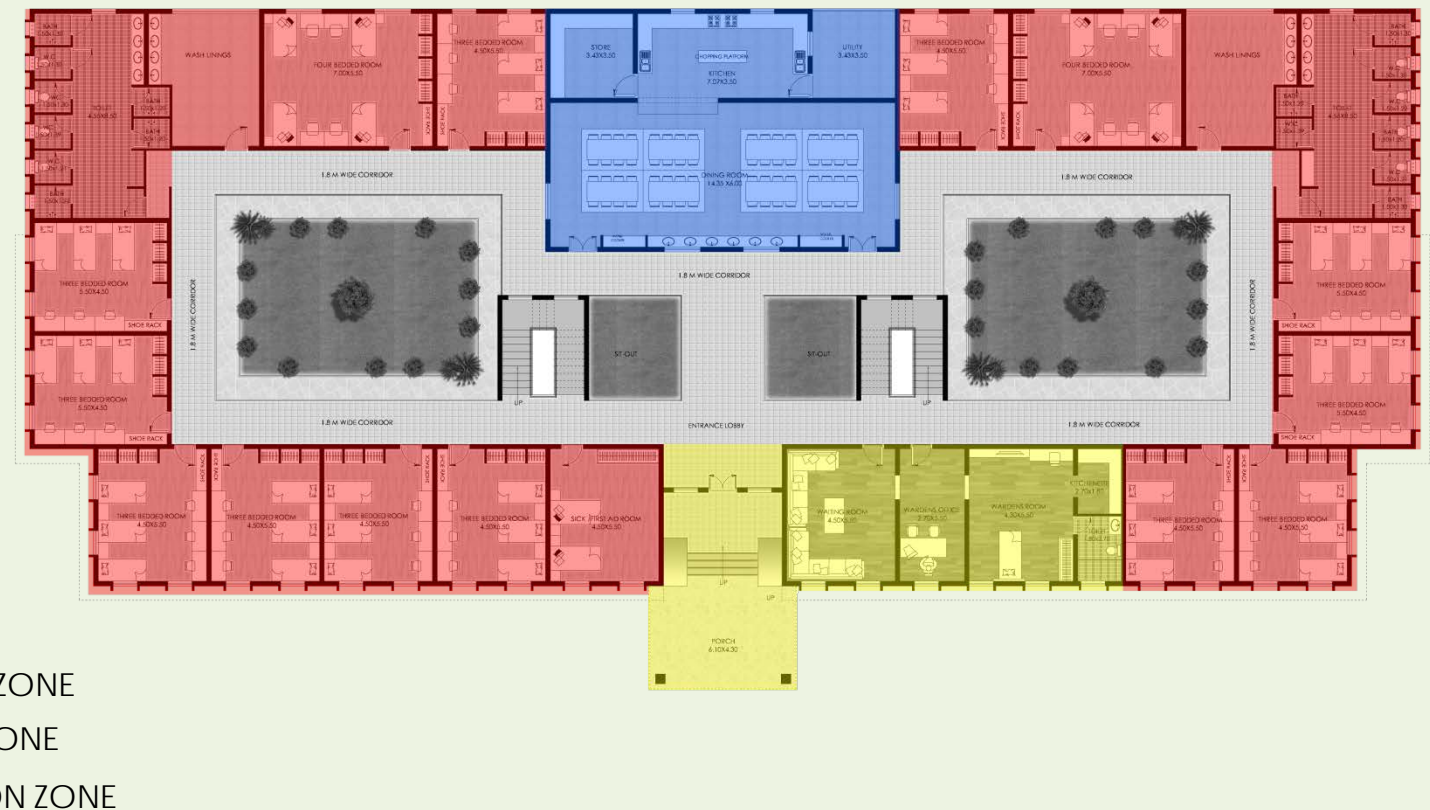
## ZONING

Zoning of the building has been done in a systematic way so that each zone doesn't mix with other zone and they can retain their identity by itself. Zoning of the building has been divided into two zones . i.e. public, private and recreational zone

- Zoning start with the public zone which consist of areas like reception ,administrative office ,waiting area etc. public zone is especially designed for visitors and have functions related to them.
- Next comes the Second zone which is private zone which consist of Rooms and Toilet Blocks. This area was especially designed for the students. This zone consist of courtyard which acts as interesting spaces where student can enjoy and sit.
- Last zone consist of all the common areas in the Hostel building which are used by all the students like Dining with Kitchen and Multipurpose hall.
- Also, due consideration for disabled is given like ramps at entrance, Separate Toilets.

## COURTYARD EFFECT

- Due to incident solar radiation in a courtyard, the air gets warmer and rises.
- Cool air from the ground level flows through the louvered openings of rooms surrounding a courtyard, thus producing air flow.
- At night, the warm roof surfaces get cooled by convection and radiation.

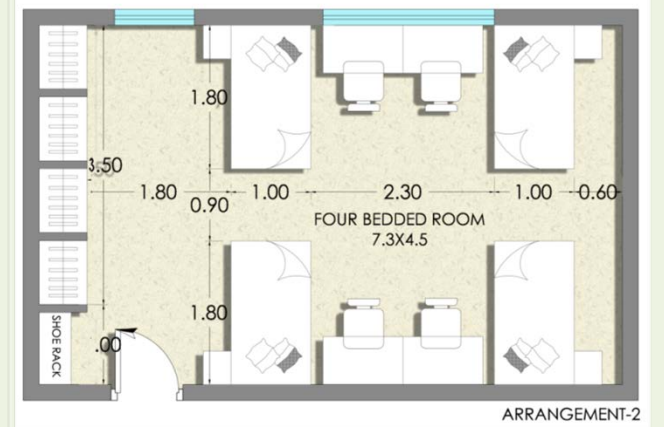




# PROPOSED GIRLS HOSTEL AT PT.R.S.S.U., RAIPUR, CHHATTISGARH



GROUND FLOOR PLAN



- Detail study of the layout for rooms is done. regarding the space requirement.
- Provision of separate almirah is done for each student.
- A shoe rack is also proposed in the room.



- Separate toilets for disabled.
- Drying space for the students.
- No. of toilets in accordance with the UGC norms.



FIRST FLOOR PLAN

