# THE VALUES OF GRIHA

## An approach to Passive Architecture Design

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CHANDIGARH

IF WE ALL WERE RESPONSIBLE THEN THE EARCH WOULD HAVE BEEN A BETTER PLACE TO LIVE

RESPONSIBLE CITIZENS

ARCHITECTS
ENGINEERS
TECHNOCRATS
BUREAUCRATS
POLITICIANS
ALL CITIZENS

DID WE NOT REALIZE THIS EARLIER?

# IF WE WERE THIS WOULD NOT HAVE HAPPENED

DISASTERS OF THE ENVIRONMENT ARE VISIBLE…

# THE EARTH IS GETTING PARCHED

# ITS GETTING HOTTER AND HOTTER

AS A TECHNOLOGIST I WAS TRAINED TO USE MY EDUCATION FOR THE BETTERMENT AND COMFORT OF THE **HUMAN BEING**

**FOR US THE STARTING POINT WAS COMMON SENSE, INTELLIGENCE, TECHNOLOGY, AND SUSTAINABILITY. THIS WAS THE AGE OLD PROCESS OF CREATING DYNAMICS IN DESIGN FROM AGES.**

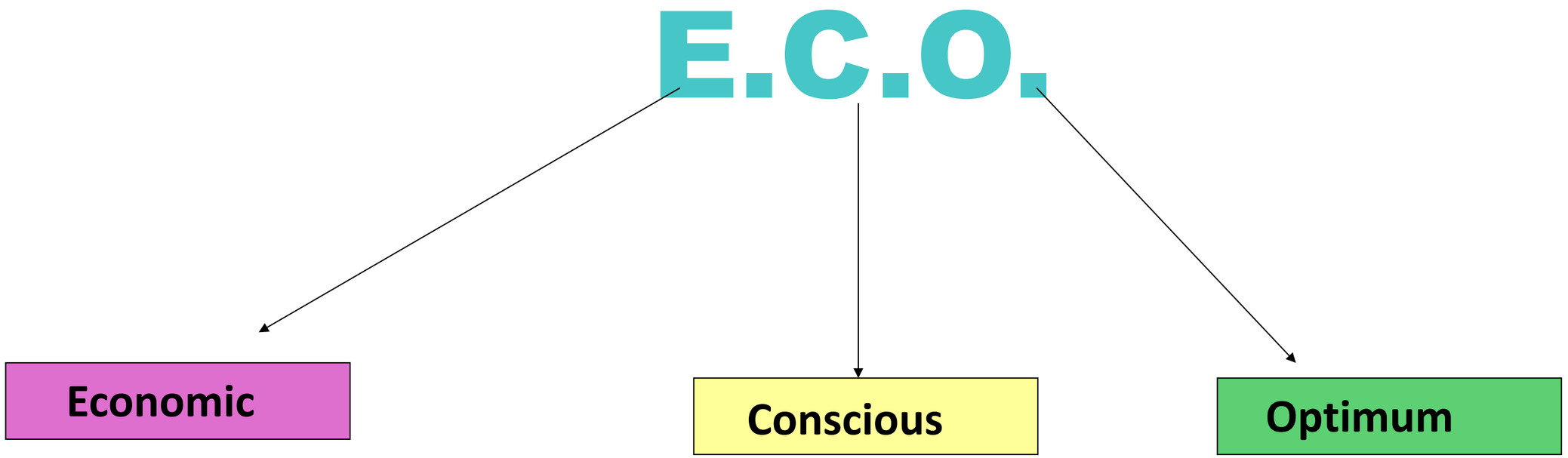
**SUSTAINABILITY…**

The word “SUSTAIN” means to thrive under a given set of conditions, to endure. The term sustainability Implies to the state where existence occurs in a set conditions. This term is extensively being used today in context of architecture.

Sustainability in architecture may be a new term but the concept beneath it is ages old. From the pages of the past, we can trace the footprints of sustainable building culture.

Sustainability in architecture is nothing else but building in such a fashion that the natural environment is not disturbed and is conditioned to derive more benefit to the building, instead of being harmed by the latter. In short, it’s about maintaining the green cover on the surface of the earth in addition to architectural development.

My Endeavour is to create “E.C.O Space”



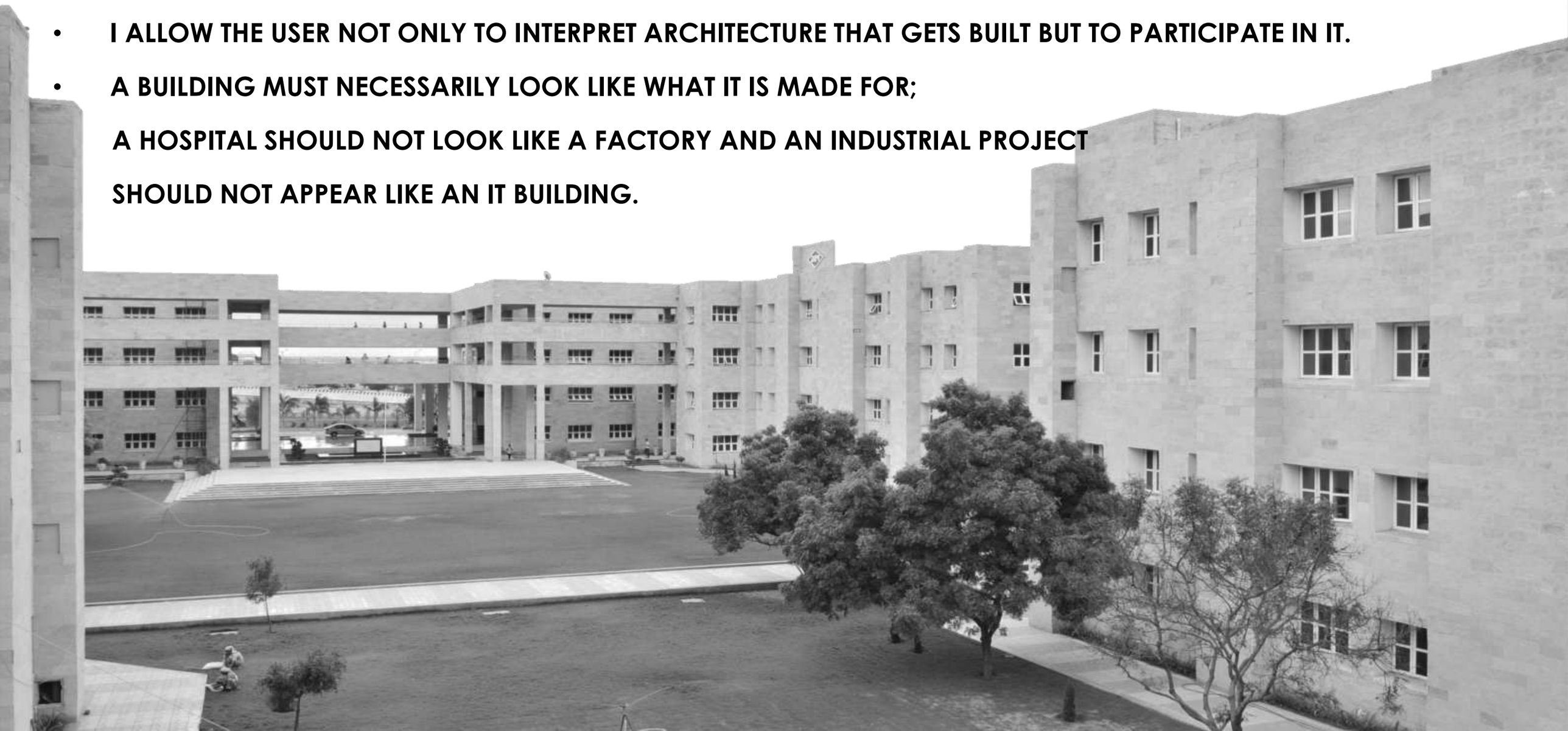

E.C.O Space= E.C.Oaesthetics

# My Architecture and Me
# SUSTAINABLITY IS THE KEY

- **LIKE ME, MY ARCHITECTURE TOO IS AMBIVERT IN NATURE. THE DICTIONARY SAYS THAT AMBIVERT MEANS: THE BALANCE OF EXTROVERT AND INTROVERT FEATURES IN A PERSONALITY. THAT IS EXACTLY WHAT I AM AND SO ARE THE SPACES THAT I CREATE.**
- **I ALLOW THE USER NOT ONLY TO INTERPRET ARCHITECTURE THAT GETS BUILT BUT TO PARTICIPATE IN IT.**
- **A BUILDING MUST NECESSARILY LOOK LIKE WHAT IT IS MADE FOR;**

  **A HOSPITAL SHOULD NOT LOOK LIKE A FACTORY AND AN INDUSTRIAL PROJECT**

  **SHOULD NOT APPEAR LIKE AN IT BUILDING.**



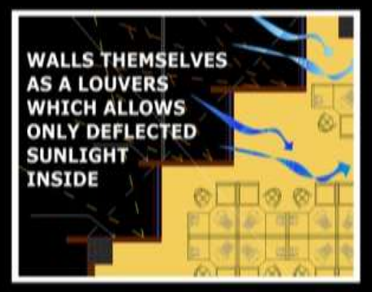
**EXPERIMENTS IN PRACTICAL SUSTAINABILITY AND ECO FRIENDLY ARCHITECTURE AND PLANNING**

**IT LEAD SOMEWHERE…**

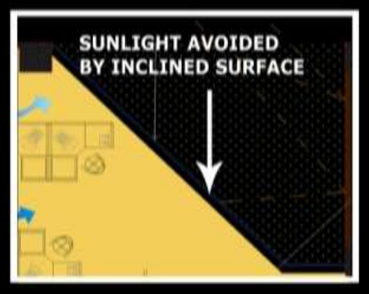
**DID IT?**

**LET US ASSESS**

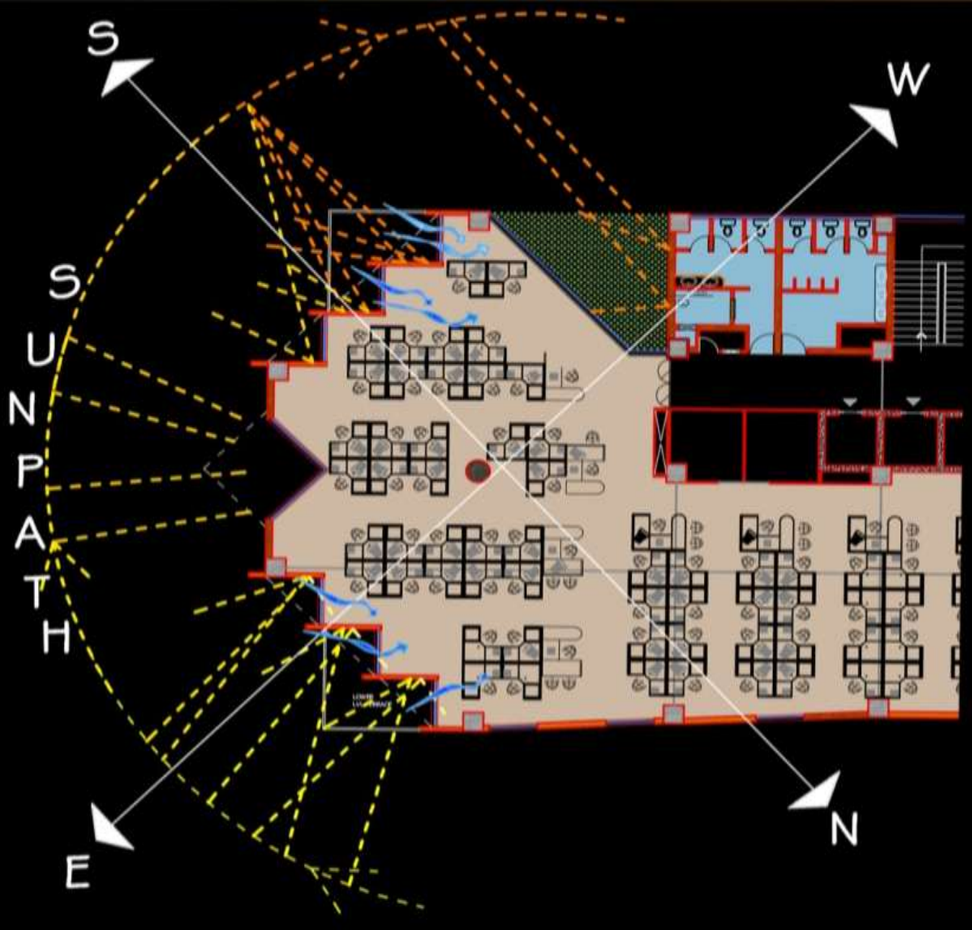
# CONCEPT.




USE OF LOUVERS

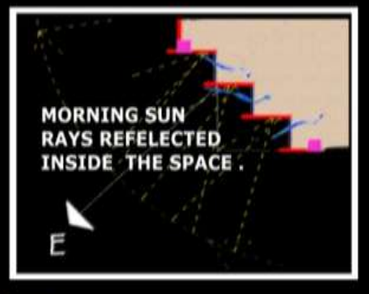



INCLINED SURFACE

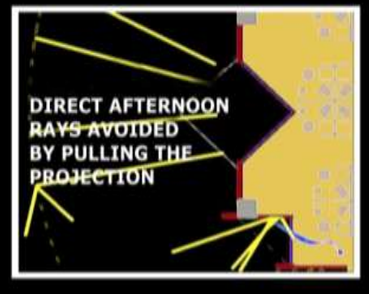



## SUSTAINABLE EFFIECIENCY

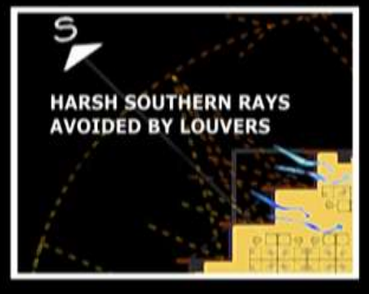
a. AS AN APPROACH TO DESIGN THE FUNDAMENTALS OF ORIENTATION HAS BEEN CONSIDERED FIRST HAND
b. INTERPLAY OF VERTICAL AND HORIZONTAL LOUVERS/FINS ARE THE INTEGRAL PART OF THE DESIGN AND PLANNING.
c. THEY ARE INSTRUMENTAL IN CUTTING THE HARSH SUN AND LETS IN THE DEFUSED LIGHT ONLY.
d. THE FRONT FAÇADE OF THE BUILDING IS TAPERED ALONG 45O FROM CENTRE POINT BASED ON THE ORIENTATION AND SUN LIGHT AND PREFERENCES.
e. FOR NATURAL DRAFT OF VENTILATION, THE BUILDING IS ORIENTED SE-NW.
f. AS THE ADJOINING PLOTS ARE CLOSE BY, PRIVACY HAS BEEN ACHIEVED BY EFFICIENT SPATIAL PLANNING AND DESIGN, SO THAT VISUAL INTERFERENCE FROM THE NEIGHBORING BUILDINGS IS MINIMAL.
g. VERTICAL FINS ALSO CALLED "LIGHT SHELVES" TAKE SHAPE OF VERTICAL SLIT WINDOWS, WHERE BEAMS OF DEFUSED SUNLIGHT TRAVELS IN THE INTERIORS.
h. THE SW WALL IS SLIGHTLY SKEWED INWARDS AND IS DEVOID OF ANY OPENINGS, SO THAT THE HARSH CONTINUOUS SUMMER SUN DOES NOT PENETRATE.
i. ON BOTH THE LONGER SIDES OF THE BUILDING THE GLAZING IS PROVIDED AT A ANGLE TO AVOID DIRECT INFILTRATION.
j. ALL ARTIFICIAL LIGHTS ARE LOW ENERGY AND EFFICIENCY ORIENTED
k. ADEQUATE SHADING FOR SOUTH & WESTERN ORIENTATION WINDOWS TO REDUCE HEAT GAIN



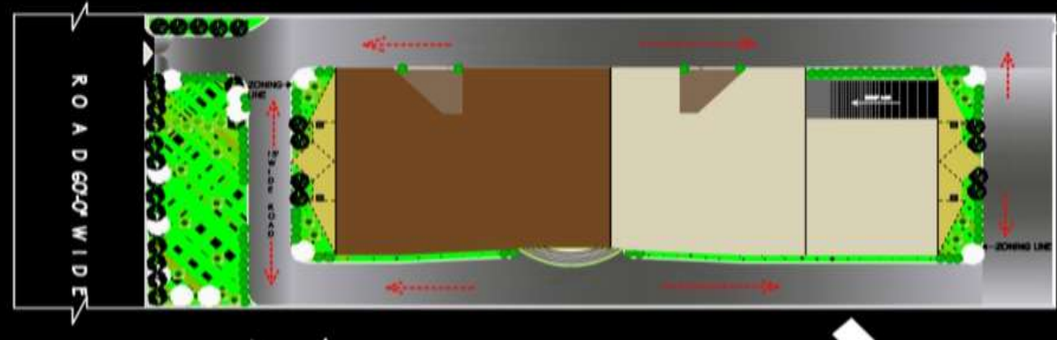

MORNING SUN EFFECT .




DIRECT SUN EFFECT




HASRH SUN EFFECT




site plan




A. THE VERTICALITY IS DIGNIFIED WITH BALANCING CENTRAL "NOSE", WHICH ALSO BREAKS THE MONOTONY OF PERPENDICULARITY.

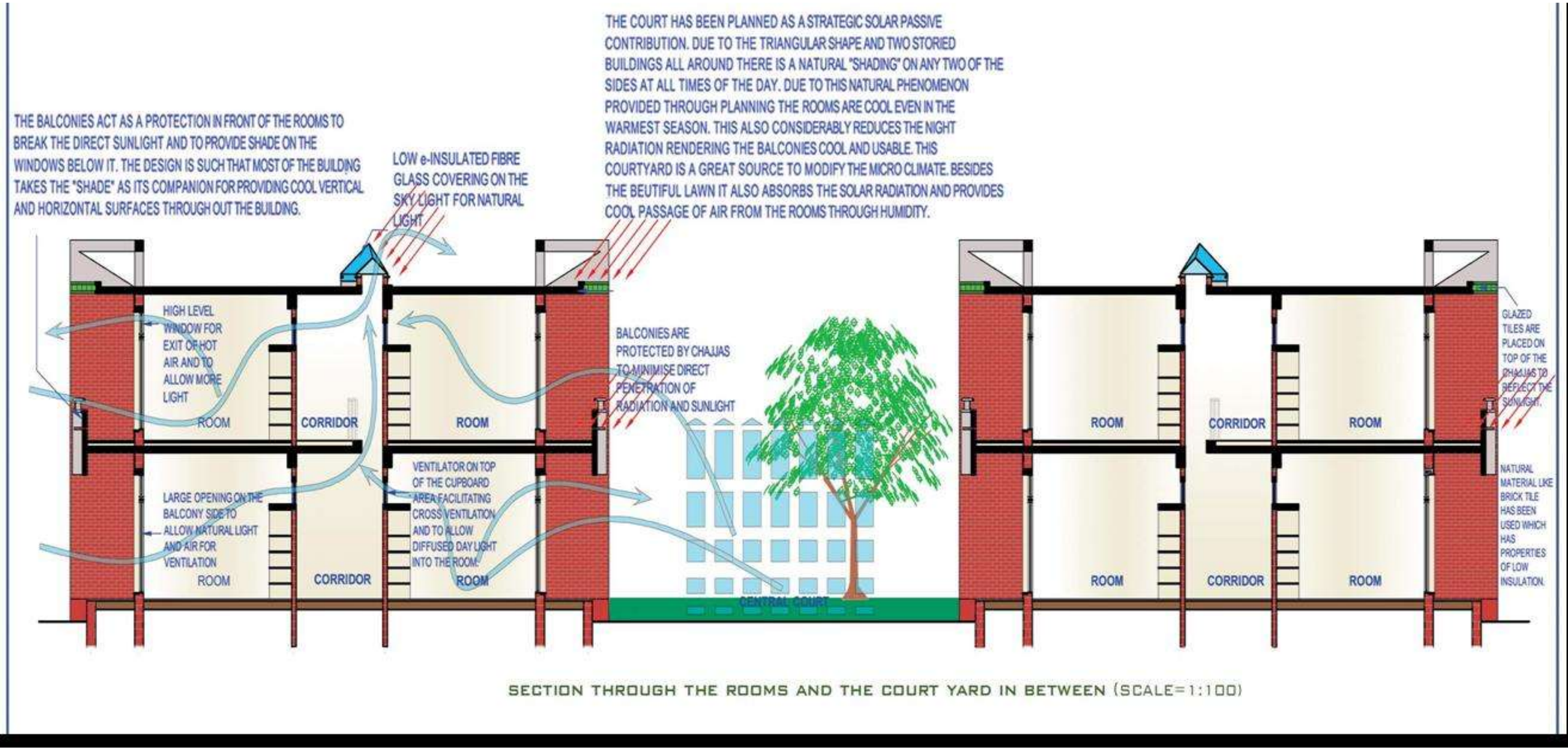
B. THE MIX AND MATCH OF CONCRETE WITH BLUE TINGE GLASS MAKES KMG BUILDING MONOLITHIC AND SCULP TURAL.

C. THE ANGULAR GLAZING HAS BEEN EXEMPLIFIED ON THE REAR ELEVATION ALSO FOR A HARMONIOUS AESTHETICS ON BOTH THE SIDES.

D. SOOTHING INTERIORS ARE PROVIDED THAT INCREASES EFFICIENCY AND REDUCES FATIGUE.

E. THE SPACES ARE SOMBER, COOL, ADEQUATELY LIT, AND CONGENIAL TO WORK.

# BOYS HOSTEL AT NIPER




SECTION THROUGH THE ROOMS AND THE COURT YARD IN BETWEEN (SCALE=1:100)

**Every green building is sustainable, but every sustainable building is not necessarily green.**

BOYS HOSTEL  AT NIPER

1

# MEGA BOYS HOSTEL, NIT JALANDHAR

The grand appearance of Mega Boys hostel

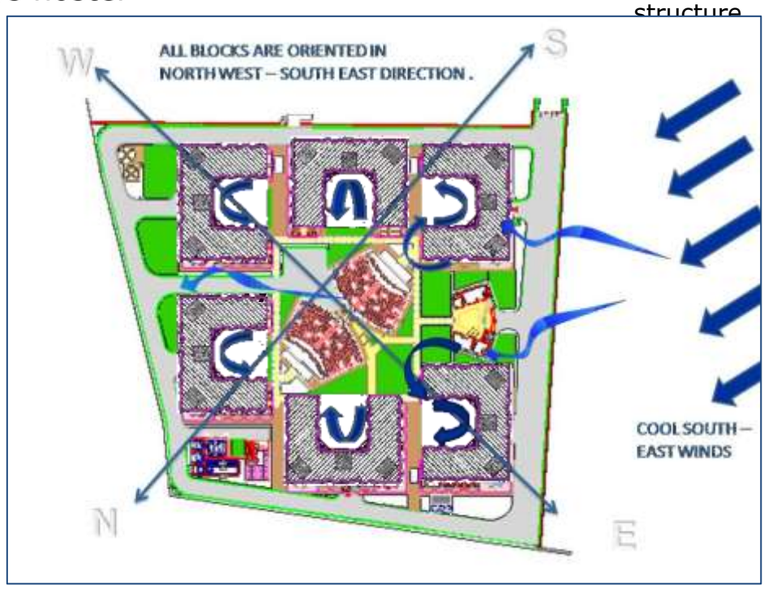
Form coulor and texture –the design element

Processing natural ventilation and light were the main concern as the hostels are generally not air-conditioned. Use of materials that are vernacular and locally available were the factors of design considerations.

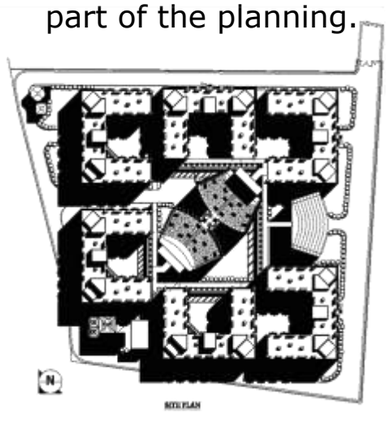
**ARCHITECTURAL CONCEPT:**

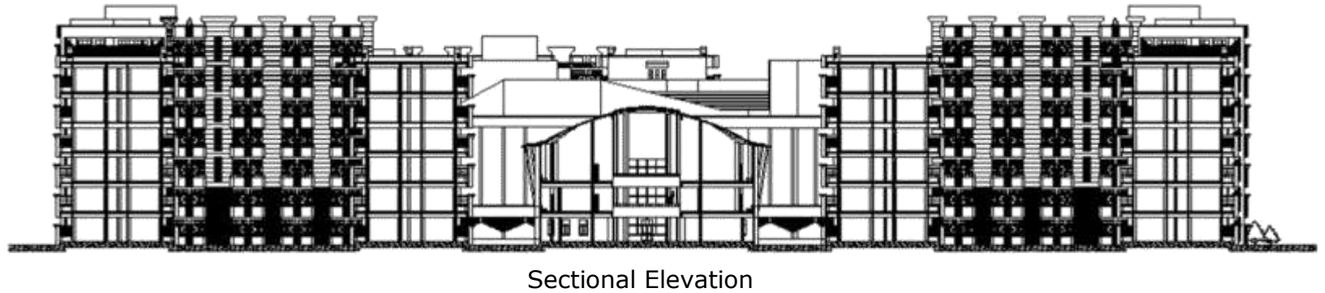
The sheer presence of geometry and its fundamentals talks were the factors that were responsible for the genesis of this design. From the whole site plan to the smallest module they are based on the movement of the amoeba, the living organism and its growth patterns. One straight line modifies and multiplies to form a unit, a module, a wing, a cluster, and then a mass.

The central courtyard and structure




The other planning factors were the organization and usefulness of the micro climate that becomes the part of the planning.





Sectional Elevation

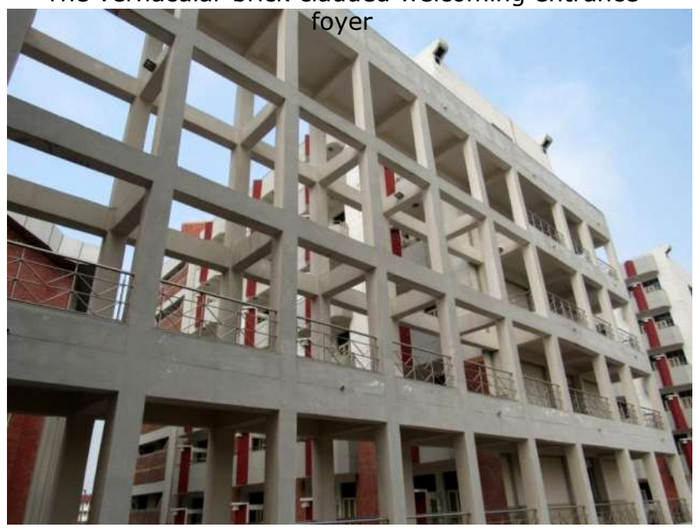
Central courtyard in every module creating microclimate

Link corridor as a binding element

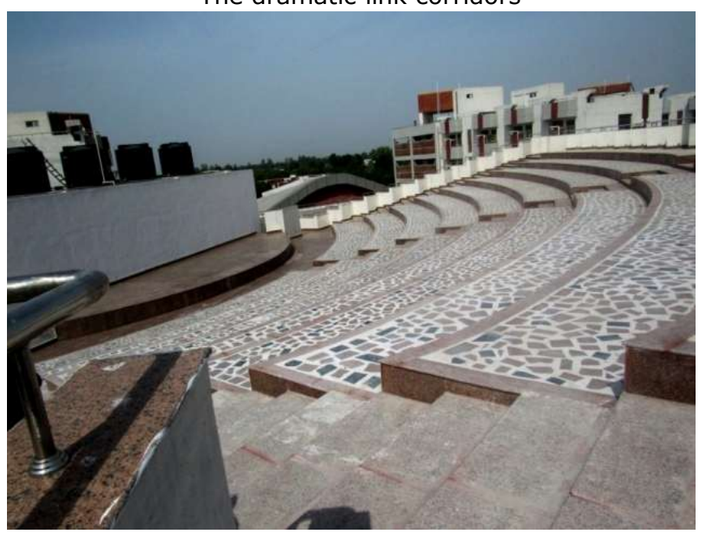
The space around toilet bocks is provided as place for drying clothes- a unique and successful concept. Natural brick *jaali* is used for cross ventilation. The bricks provide the rustic element

# MEGA BOYS HOSTEL AT NIT JALANDHAR

The vernacular brick cladded welcoming entrance foyer



The dramatic link corridors

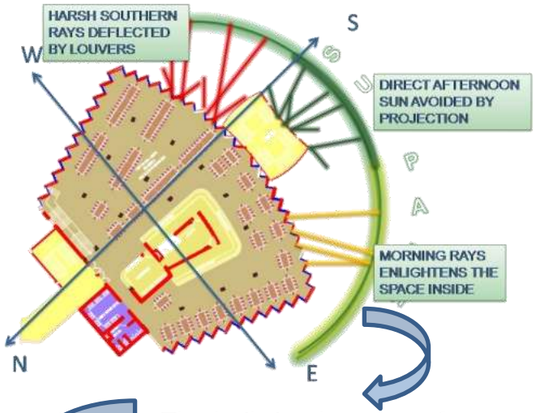


The fascinating open air theatre on the roof top is a congregation space for outdoor activities and relaxation

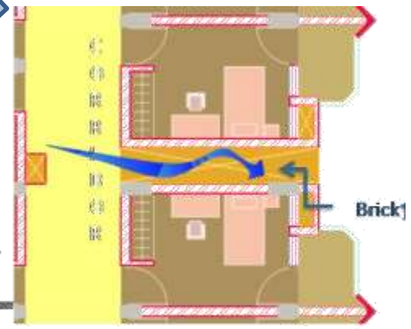
The central mess block is a combination of louvers, massing and deft detailing

Louvers acts as passive sustainable elements protecting the interiors from heat

Orientation plays vital role in this design, considering the sun and wind as the motivators of good living. The factors of green buildings have been adopted not to attain the rating but to achieve an ecologically, true and honest architectural solution.




The built in elements of sustainability is the hallmark of this design creating


The elements of structure, and function combine as a visual iconography

The usability of the terrace spaces is the touch stone of this design. Enormous terrace spaces, which would remain unused otherwise have been effectively converted into open-air theaters, which act as "the breathers" in the clusters of tall habitable structures all around. The steps of these terrace spaces also double up as leisure gardens, as well as outdoor study areas for the hostellers, which are easily accessible from any building block. The mess blocks are all approachable by separate service entry.

WHAT DOES A MAN WANT- COMFORT CONDITIONS

THE GOVERNING EYE WAS MISSING

A LITTLE DELICATE WHIP WAS REQUIRED

A GUIDELINE, A POINTER A BALL PARK WAS NEEDED

**GRIHA** WAS INTRODUCED…

# INTRODUCTION

- **GRIHA** - **G**REEN **R**ATING FOR **I**NTEGRATED **H**ABITAT **A**SSESSMENT IS A WELL KNOWN PROCESS WHICH LEAD THE BUILDING TO AN ENVIRONMENTAL FRIENDLY BY INTEGRATING NATURE AND MAN MADE STRUCTURE INTO ONE FOR A HABITABLE CONDITION.

- GRIHA NOT ONLY APPLIES TO THE BUILDING WHILE FUNCTIONING BUT ALSO WHILE CONSTRUCTION ALSO.

It is segregated into three categories:

**Pre-construction.**
Pre-construction stage includes the existing site features and methods to handle site while not disturbing the existing environment to the maximum extent.

**Construction.**
Construction  stage includes the method of construction, safety and health management for the workers, preservation of landscape from the construction site etc…

**Post-construction.**
Post-construction stage includes the proper segregation of waste, water recycling method, water treatment, use of renewable energy etc….

MY EXPERIENCE WITH GRIHA WAS LIKE WORKING WITH SUSTAINABILITY GPRS

FOR AN ARCHITECT IT IS IMPORTANT TO TREAD THE PATH OF SUSTAINIBILITY

G RIHA AND SUSTAINABILITY GO HAND IN HAND

AN ARCHITECT’S DREAM IS TO DESIGN GREAT ARCHITECTURE BUT NOT DEVOID OF INTELLIGENCE , ECO-FRIENDLYNESS AND COMFORT.

MY FIRST EXPERIENCE WITH GRIHA WAS IN ONE OF THE PROJECTS “PSG INSTITUTE OF TECHNOLOGY AND APPLIED REASEARCH” AT COIMBATORE

WE WERE AFRAID

LIKE ALL MOVEMENTS THERE WAS APPREHENSION, CONCERN, RESPONSIBILITY SHARING OR THE AVOIDANCE OF IT, TOO MANY QUESTIONS, FEW ANSWERS, PLANNING, STARTING, PUSHING, DIALOGUE, AND MOTIVATING

WHEN THINGS SEEMED INCOMPREHENSIBLE , SOMEONE STOOD UP TO QUELL THE CONCERN. HELPING HANDS EMERGED. ANSWERS AND SOLUTIONS PROVIDED. THERE WAS SOMEONE-A  SET OF GOOD PEOPLE, GOOD INTELLIGENT, SENSIBLE AND **DEVOTED** PEOPLE ACROSS THE ABLE IN THE ORGANIZATION OF **GRIHA** WHO WERE ALL EARS TO US.

# GRIHA ACTIONS ON SITE

**These were required to be done . We had no clue about these points …**

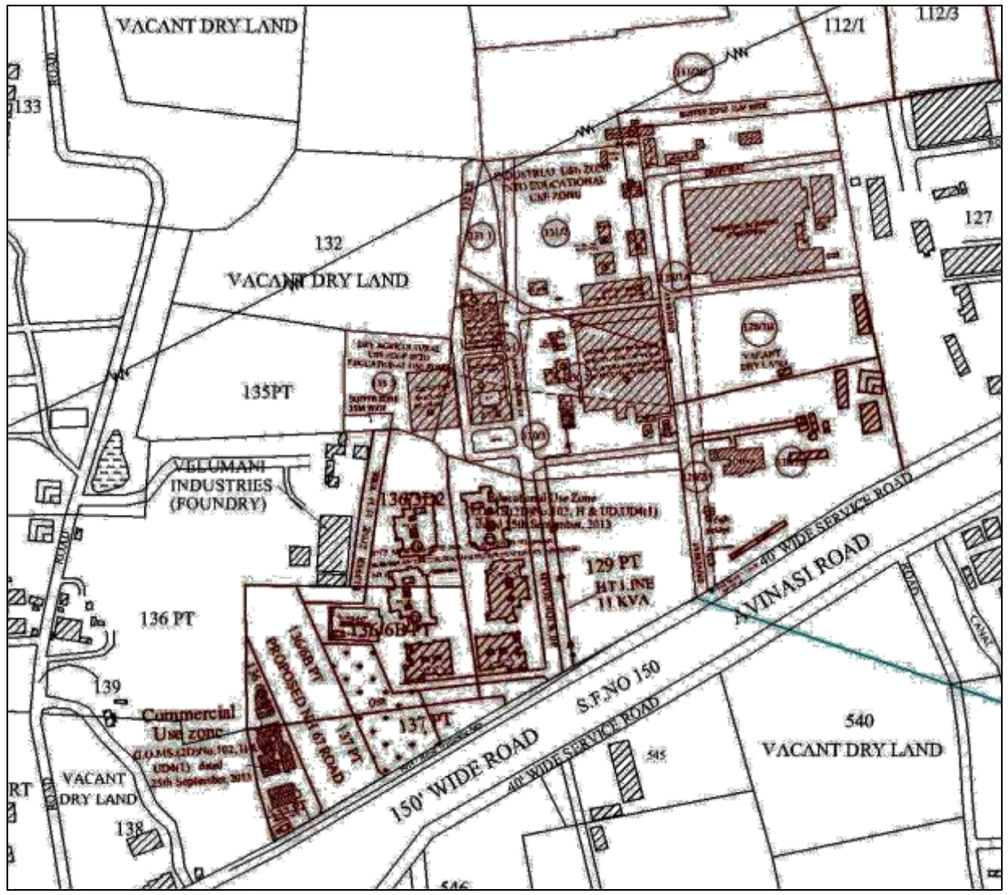
1. SITE SELECTION
2. PRESERVE AND PROTECT LANDSCAPE DURING CONSTRUCTION
3. SOIL CONSERVATION
4. DESIGN TO INCLUDE EXISTING SITE FEATURES
5. REDUCE HARD PAVING ON SITE/ AND OR PROVIDE SHADED HARD PAVED SURFACES
6. ENHANCE OUTDOOR LIGHTING SYSTEM EFFICIENCY
7. PLAN UTILITIES EFFICIENCY AND OPTIMIZE ON SITE CIRCULATION EFFICIENCY
8. SANITATION / SAFETY FACILITIES
9. REDUCE AIR POLLUTION DURING CONSTRUCTION
10. REDUCE LANDSCAPE WATER REQUIREMENT

1. Reduce the water use by the building
2. Efficient water use during construction
3. Optimize building design to reduce conventional energy demand
4. Optimize energy performance of building within specified comfort limits
5. Utilization of fly ash in building structure
6. Reduce volume and weight, and time of construction by adopting efficient technologies (e.g. pre-cast systems, etc.)
7. Use low energy material in interiors.

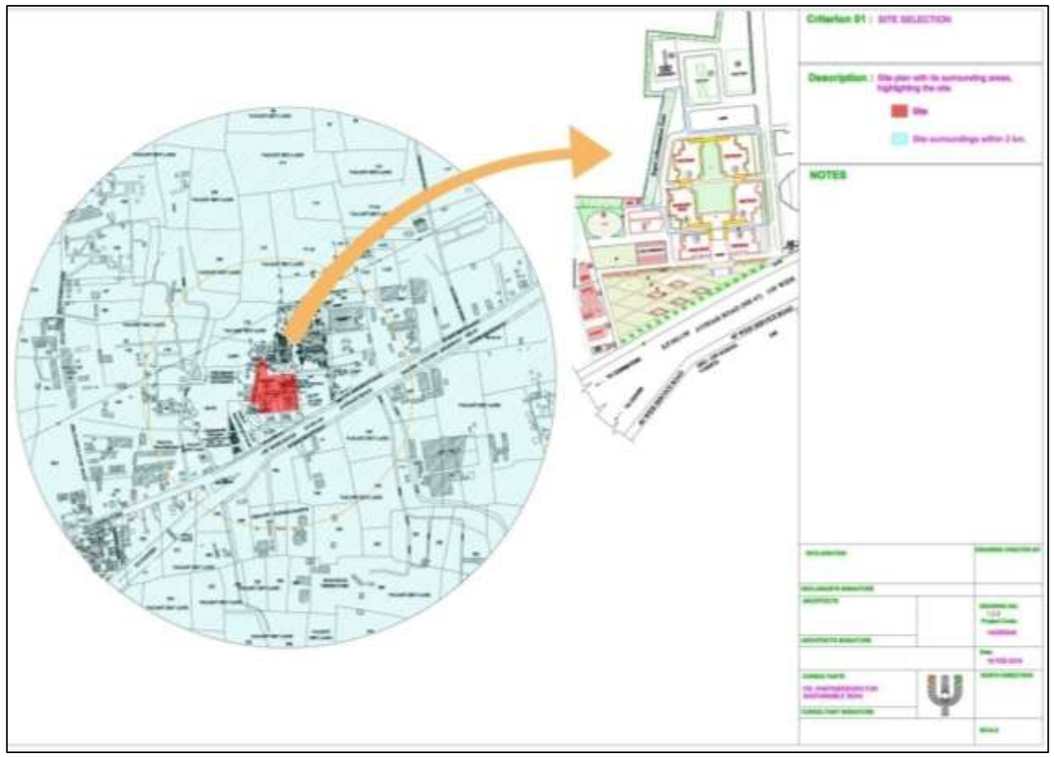
1. Renewable energy utilization
2. Renewable energy based hot water system
3. Waste water treatment
4. Water recycle and reuse (including rainwater)
5. Reduction in waste during construction
6. Efficient waste segregation
7. Storage and disposal of waste
8. Resource recovery from waste
9. Use low -VOC paints/ adhesives/ sealants
10. Minimise ozone depleting substances
11. Ensure water quality.
12. Acceptable outdoor and indoor noise levels.
13. Tobacco and smoke control
14. To ensure accessibility /usability of the building and its facilities by employees, visitors, and clients with disabilities.
15. Operation & maintenance
16. Innovation points

**BUT WE STARTED WITH AN OPEN HEART AND PASSIONATE MIND**

# SITE SELECTION
# CRITERION-1




TOPOGRAPHICAL PLAN OF NEELAMBUR




PLAN SHOWING THE SITE AND ITS SURROUNDING AREAS UPTO 0.5 KM AND 2KM


SHOWING GOOGLE EARTH IMAGE THE SITE AND ITS SURROUNDING AREAS UPTO 0.5 KM AND 2KM

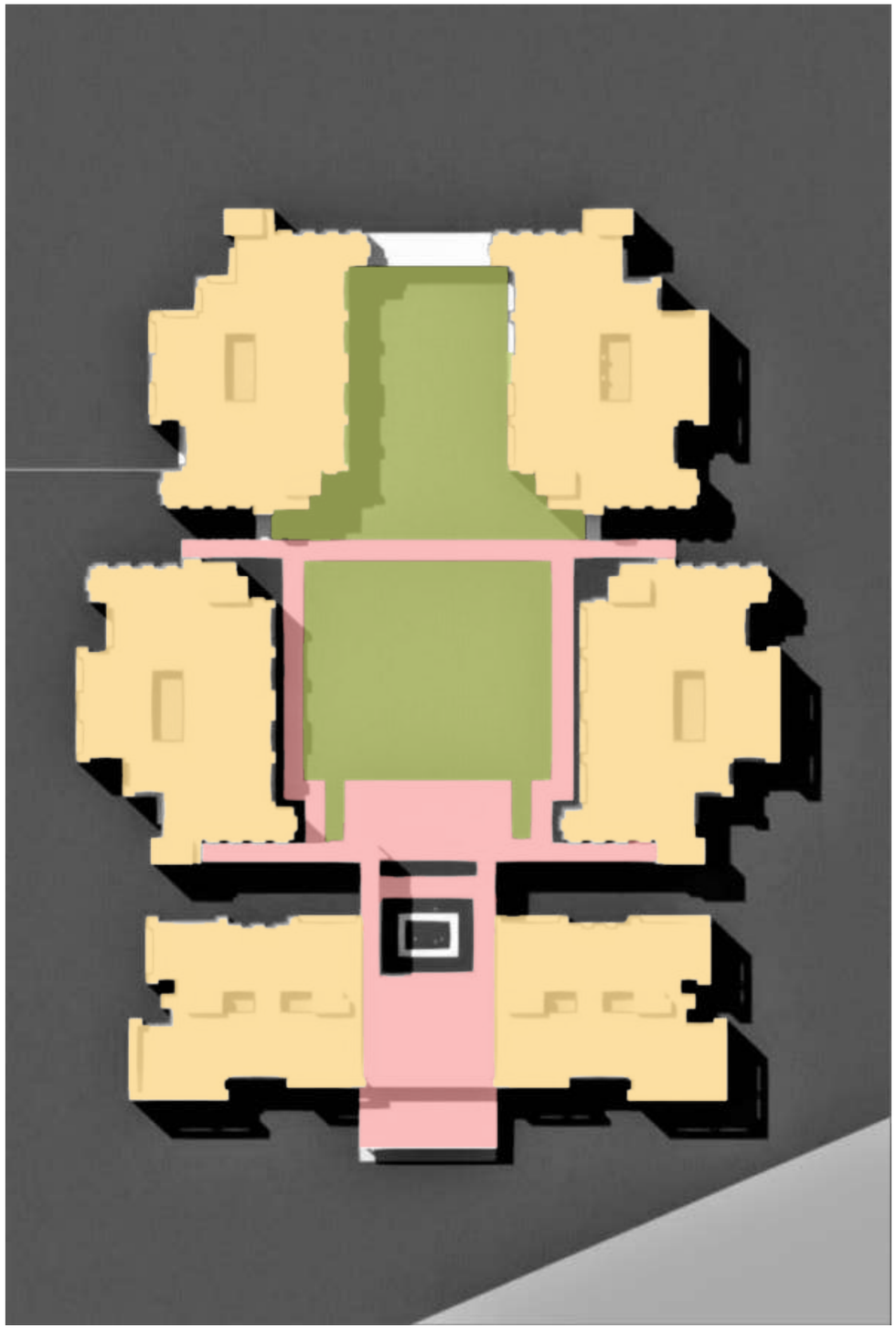
# DESIGN FEATURES

AS ALWAYS GOOD SUSTAINABLE APPROACH IN ARCHITECTURAL DESIGN IS THE CATCH TO ACHIEVE THE END RESULT OF GRIHA.

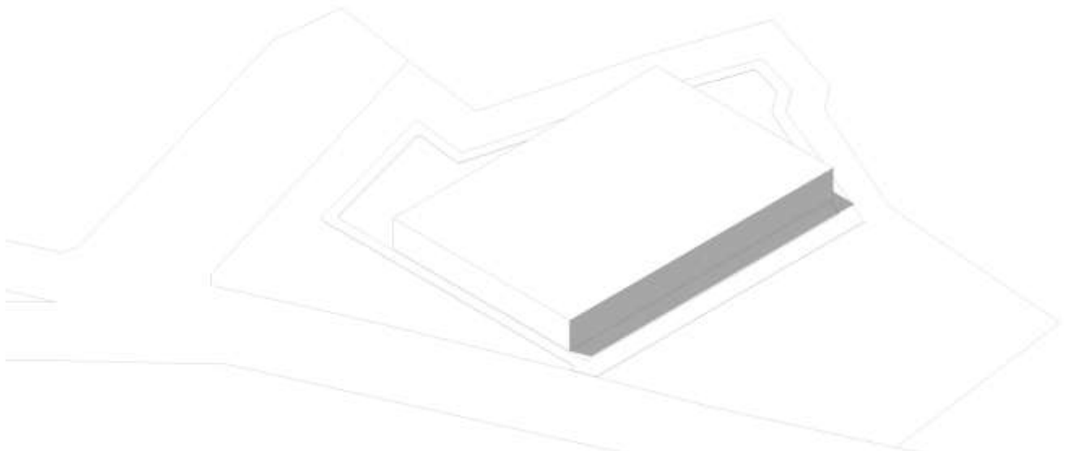
- COURTYARD PLANNING AS A CLIMATIC RESPONSE
- DIRECT WIND FLOW
- FORMATION OF CENTRAL PORCH AS A PRIMARY GATHERING SPACE WITH A SMALL MICROCLIMATE DEVELOP IN ITSELF BY CROSS VENTILATION
- ROOF INSULATION
- OPTIMIZATION OF STRUCTURE TO REDUCE EMBODIED ENERGY

# CONCEPT

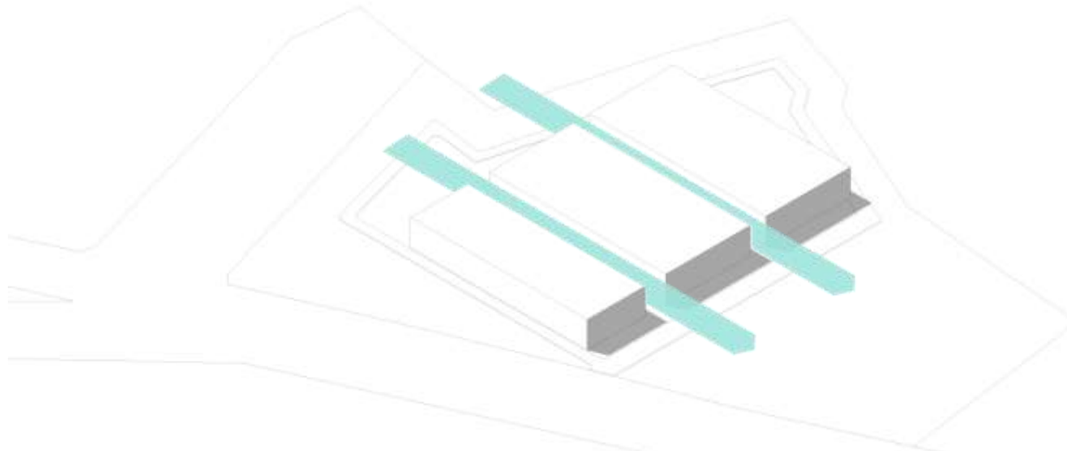
- AS A ROUTINE, THE DEPARTMENTS ARE PLACED AS PER THE CATEGORY AND FUNCTION.
- THE SPECIALTY OF THE PROJECT DESIGN WAS CENTRAL PORCH AREA AND DIFFERENCE IN VOLUMETRIC SCALE.
- THE CONNECTIONS AND BRIDGES ABOVE GIVE SEMI PROTECTIONS.
- THE AMBIANCE CREATED IS STUDIOS, INTELLECTUAL AND FULL OF POSITIVE ENVIRONMENTS MOST CONDUCIVE FOR STUDIES AS WELL AS INTERACTION.



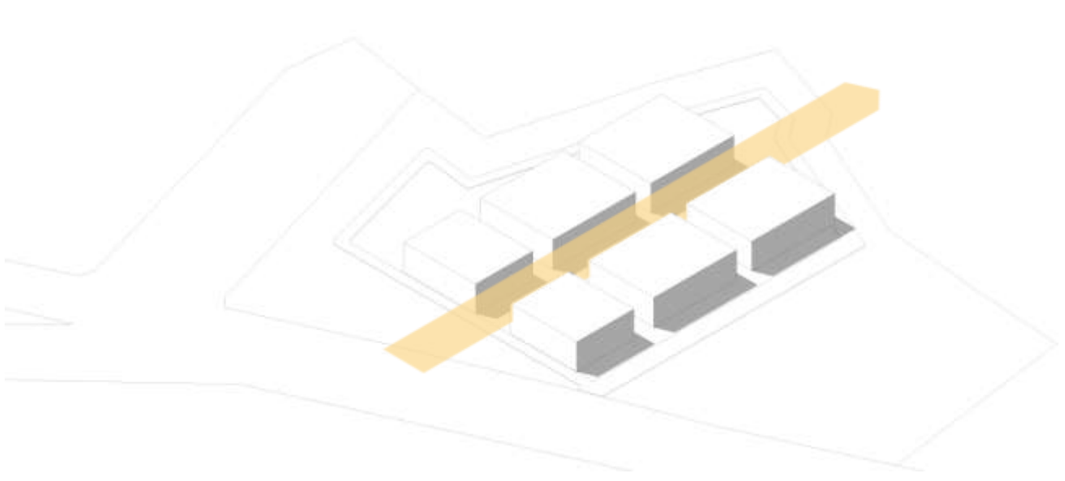
# Design Process



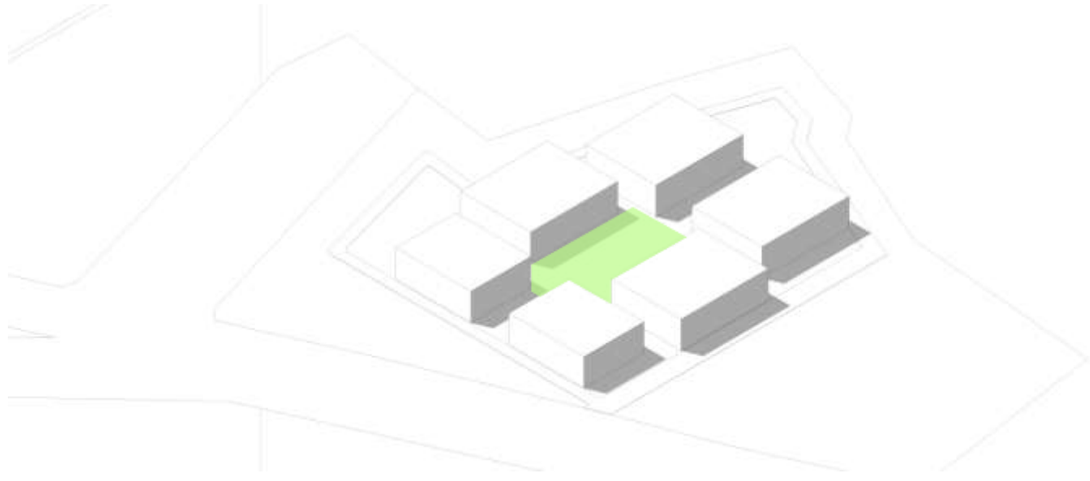
AS A WHOLE MASS, BLOCK IS ORIENTED AS SOUTHERN PART AS A MAIN ENTRANCE



BETWEEN TWO BLOCKS SPACES ARE CREATED FOR CROSS VENTILATION

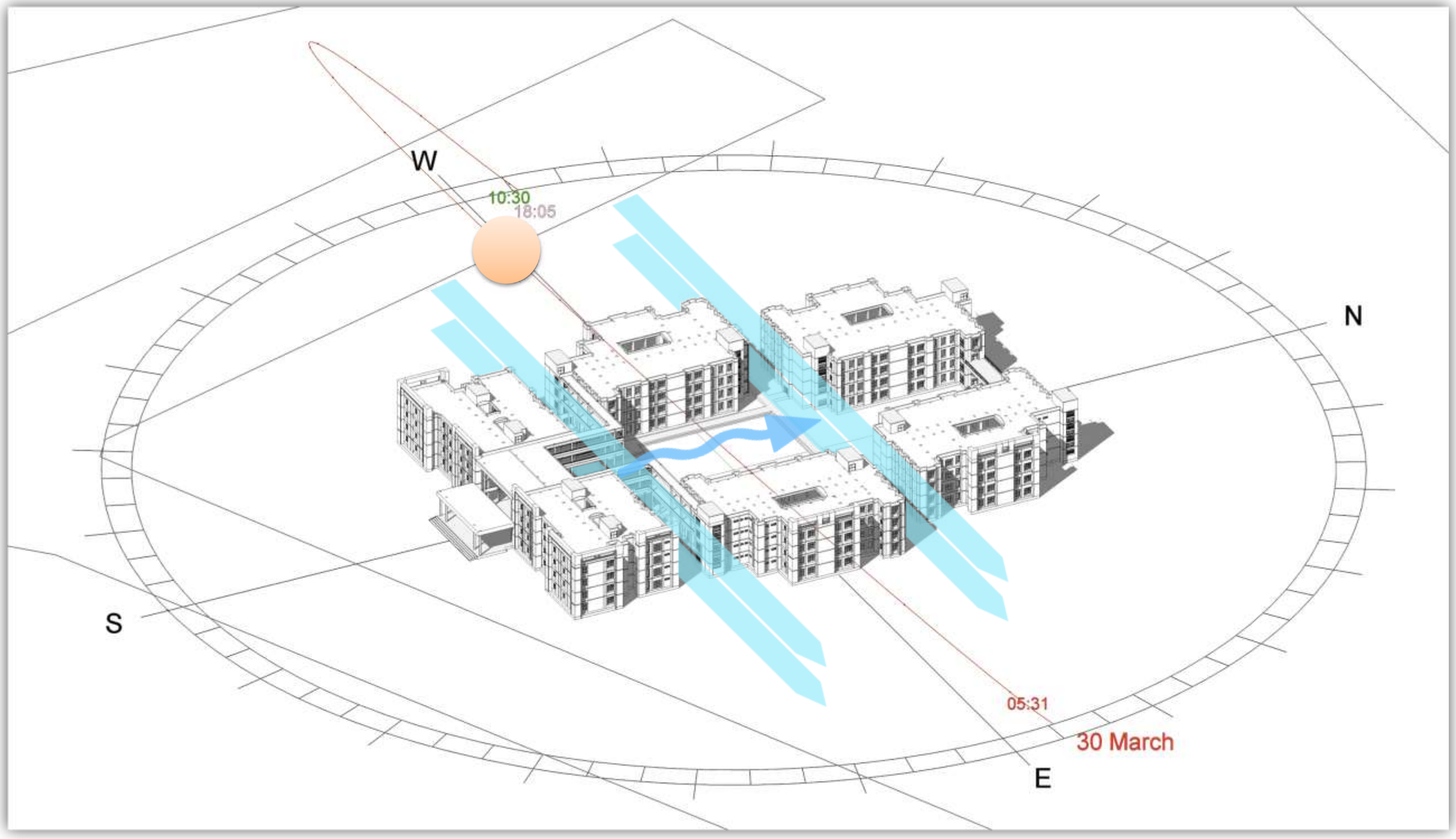


DESIGN OF THE ENTRANCE PORCH IS TRIPLE HEIGHT, FOR OBTAINING MAXIMUM CROSS VENTILATION AND UNOBSTRUCTED VIEW



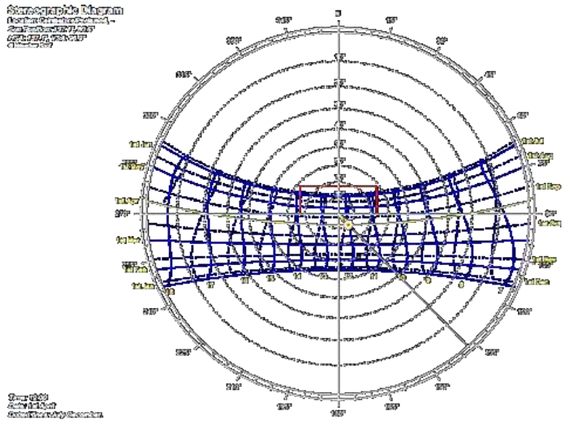
CENTRAL COURTYARD IS PROVIDED FOR MAXIMUM LIGHT AND VENTILATION AND ALSO AS A MAJOR AREA FOR INTERACTION AND OTHER ACTIVITIES

- The south-west and western areas have been protected from harsh sunlight by creating forest zone which is a unique feature.
- The windows are semi-openable so as to provide easy flow of air and reduce noise level.



# SITE LAYOUT OF BUILDING STRUCTURE TO TRAP WIND FOR VENTILATION

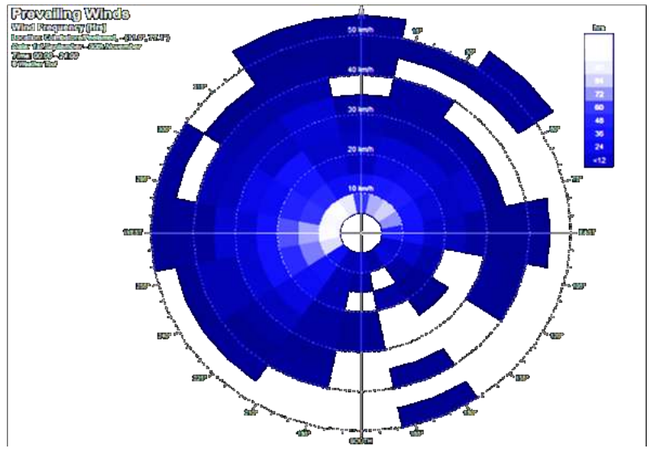
WHILE THE BUILDING IS AIR CONDITIONED SITE PLANNING HAS BEEN DONE FOR EFFECTIVE VENTILATION FOR BUILDING SURROUNDING AREAS AND TERRACES



THE CLIMATE OF COIMBATORE IS A MONSOON-INFLUENCED HUMID SUBTROPICAL CLIMATE WITH HIGH VARIATION BETWEEN SUMMER AND WINTER TEMPERATURES AND PRECIPITATION, HAS RELATIVELY DRY WINTERS AND HAS A PROLONGED SPELL OF VERY HOT WEATHER.

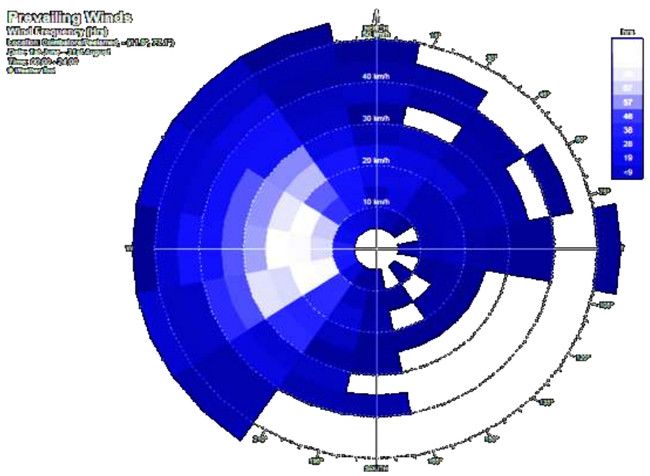
**PREVAILING WINDS : SUMMERS**

IN SUMMERS WIND FLOW IS MOSTLY IN THE WEST DIRECTION. WITH AVERAGE SPEEDS RANGING FROM 10 TO 20 M/S



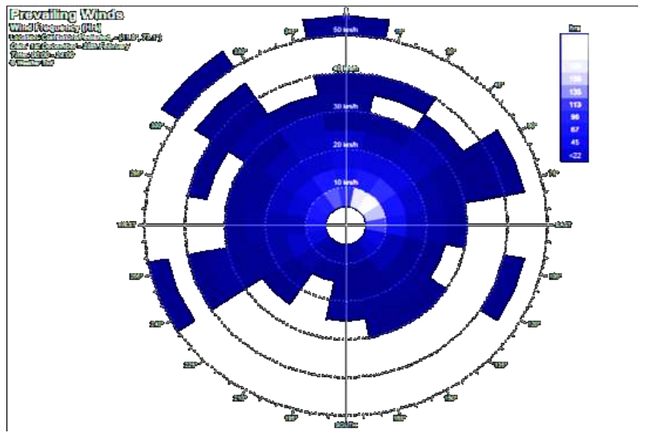

**PREVAILING WINDS : WINTERS**

IN SUMMERS WIND FLOW IS MOSTLY IN THE DIRECTION OF NORTH EAST. WITH AVERAGE SPEEDS RANGING FROM 5 TO 10 M/S



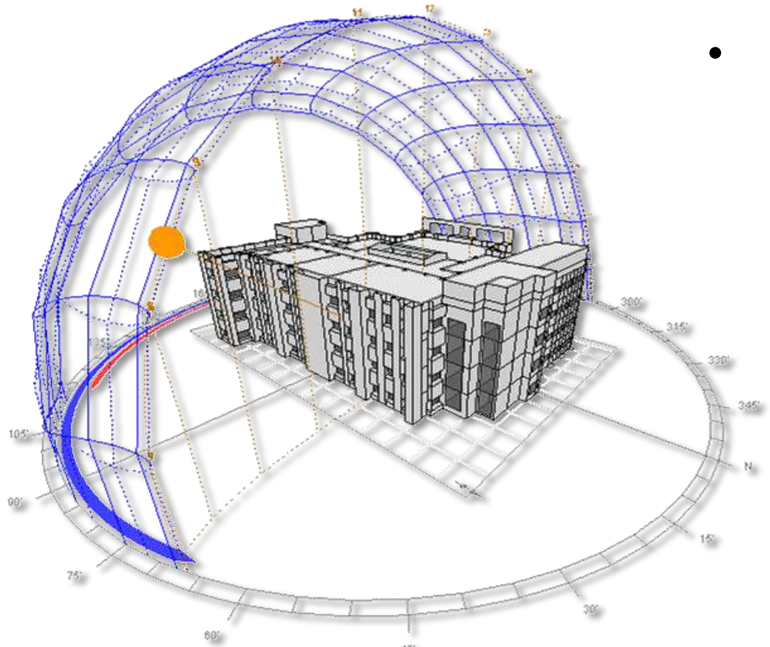

**PREVAILING WINDS : MONSOON**

IN SUMMERS WIND FLOW IS MOSTLY IN THE DIRECTION OF WEST OR NORTH WEST. WITH AVERAGE SPEEDS RANGING FROM 5 TO 10 M/S



# Detailed Analysis To Demonstrate Sustainable Site And Building Planning

GEOGRAPHIC LATITUDE AND MICROCLIMATIC FACTORS SUCH **AS WIND LOADS**



- **BUILDING LAYOUT FOR SOLAR ORIENTATION**

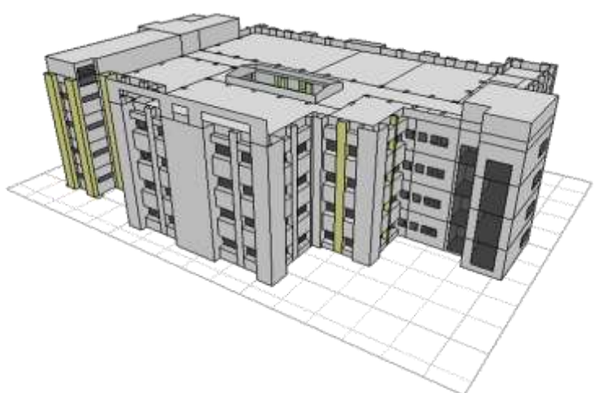
  THE BUILDING IS ORIENTED TOWARDS EAST-WEST

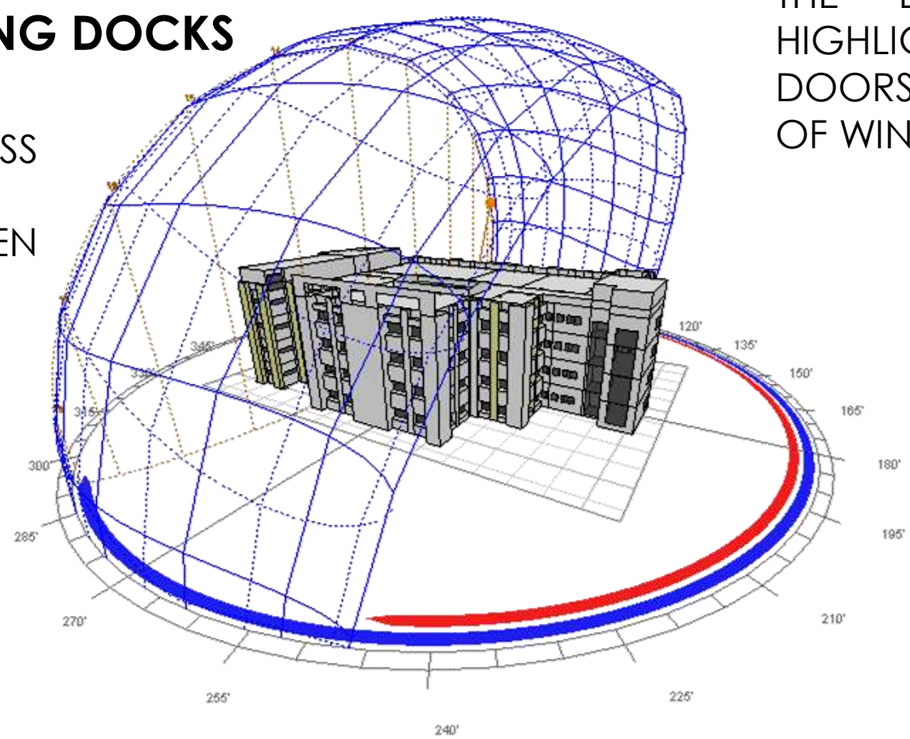
  WEATHER DATA

  - LOCATION : PSG, NELLAMBUR, COIMBATORE
  - LATITUDE : 11°00 'N
  - LONGITUDE : 77°00' E
  - CLIMATE : COIMBATORE HAS A PLEASANT , SALUBRIOUS CLIMATE DUE TO ITS PROXIMITY TO THICKLY FORESTED MOUNTAIN RANGE. THE CITY HAS A TROPICAL WET AND DRY CLIMATE.

- **LOCATION OF WINDOWS, DOORS AND LOADING DOCKS**

THE WINDOWS ARE LOCATED ON THE PERIPHERY ACROSS THE WHOLE BUILDING.
THE WINDOWS FACING WEST AND EAST SIDES HAVE BEEN USED TO CUT THE HARSH SOLAR RADIATIONS.





THE BUILDING MODEL HIGHLIGHTING ENTRANCE DOORS AND LOCATION OF WINDOWS.

# Site Plan

ECE BLOCK

CIVIL BLOCK

EEE BLOCK

CENTERAL PORTICO

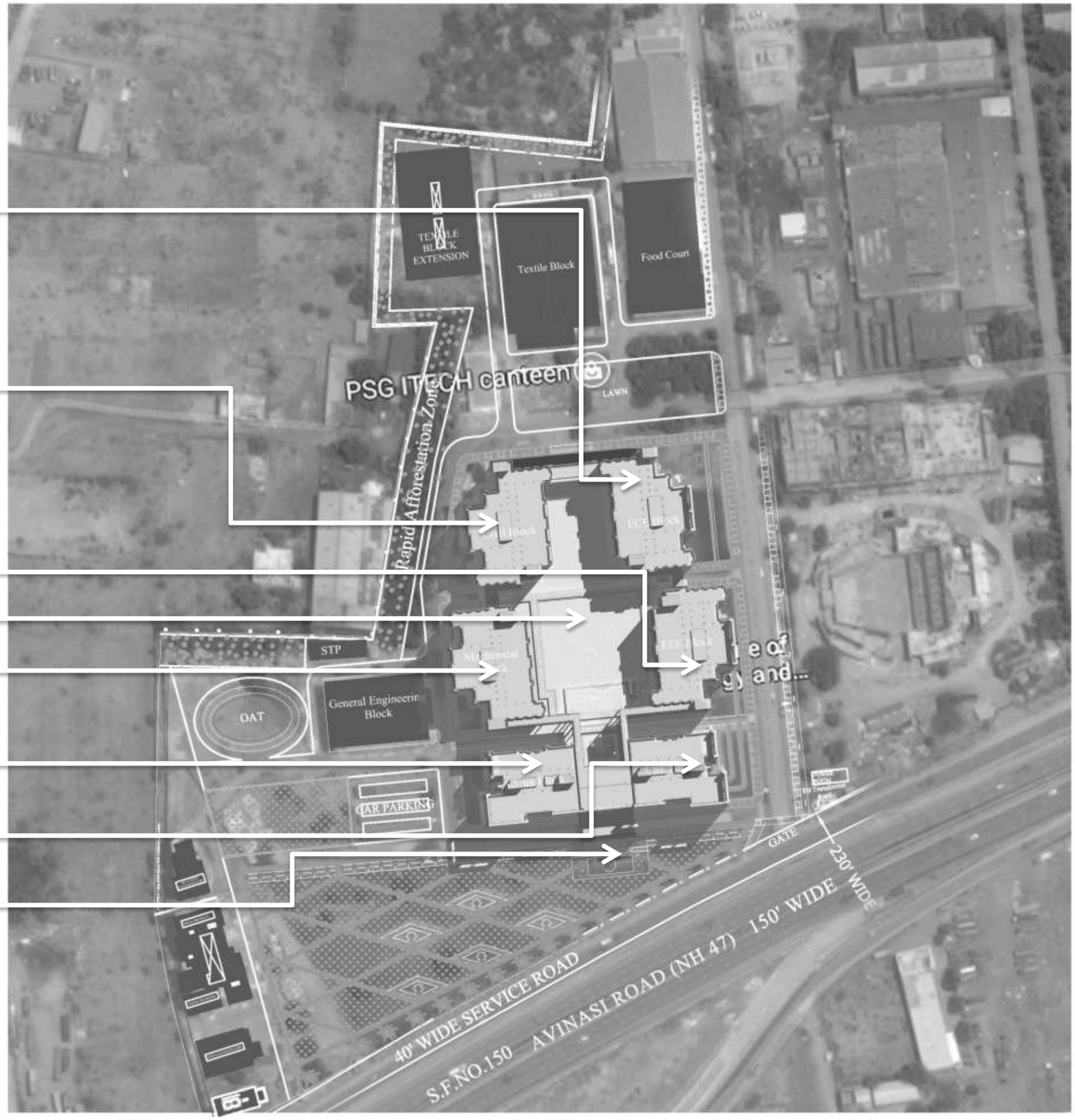
MECH. BLOCK

ADMIN. BLOCK

CSE BLOCK

ENTRANCE

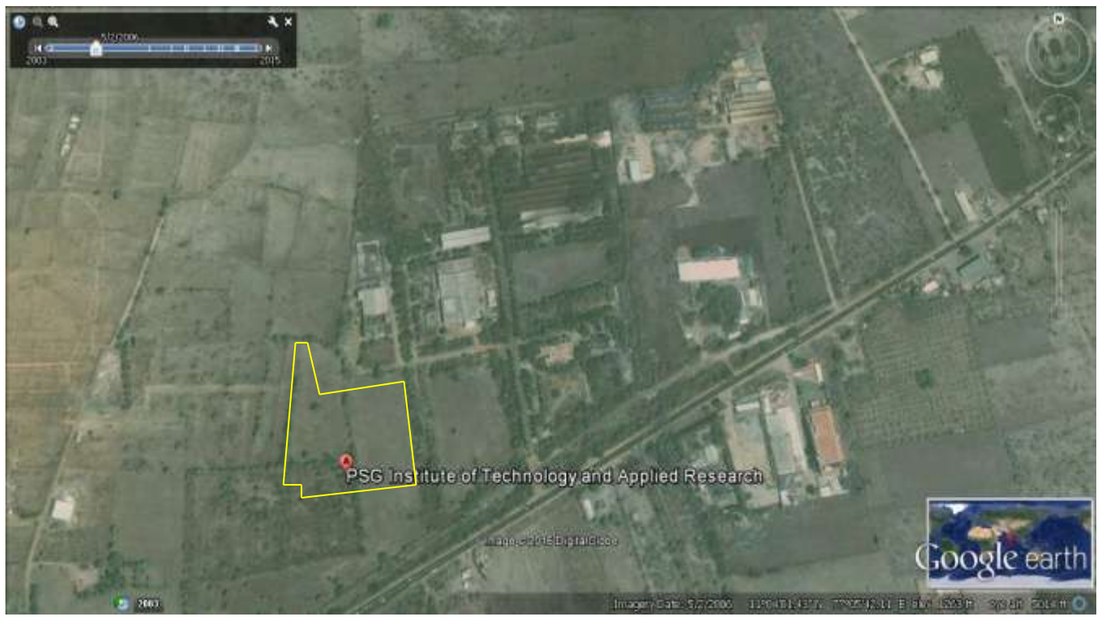
PORTICO




**Ar. Sangeet Sharma**

THANK GOD FOR THIS, THE GRIHA TEAM WOULD HAVE GRUMBLED

# PRESERVE AND PROTECT LANDSCAPE DURING CONSTRUCTION -CRITERION-2




GOOGLE IMAGE SHOWING THE EXISTING TRESS AT SITE -YEAR-2006


GOOGLE IMAGE SHOWING THE EXISTING TREES AND CUT AT SITE-YEAR 2010

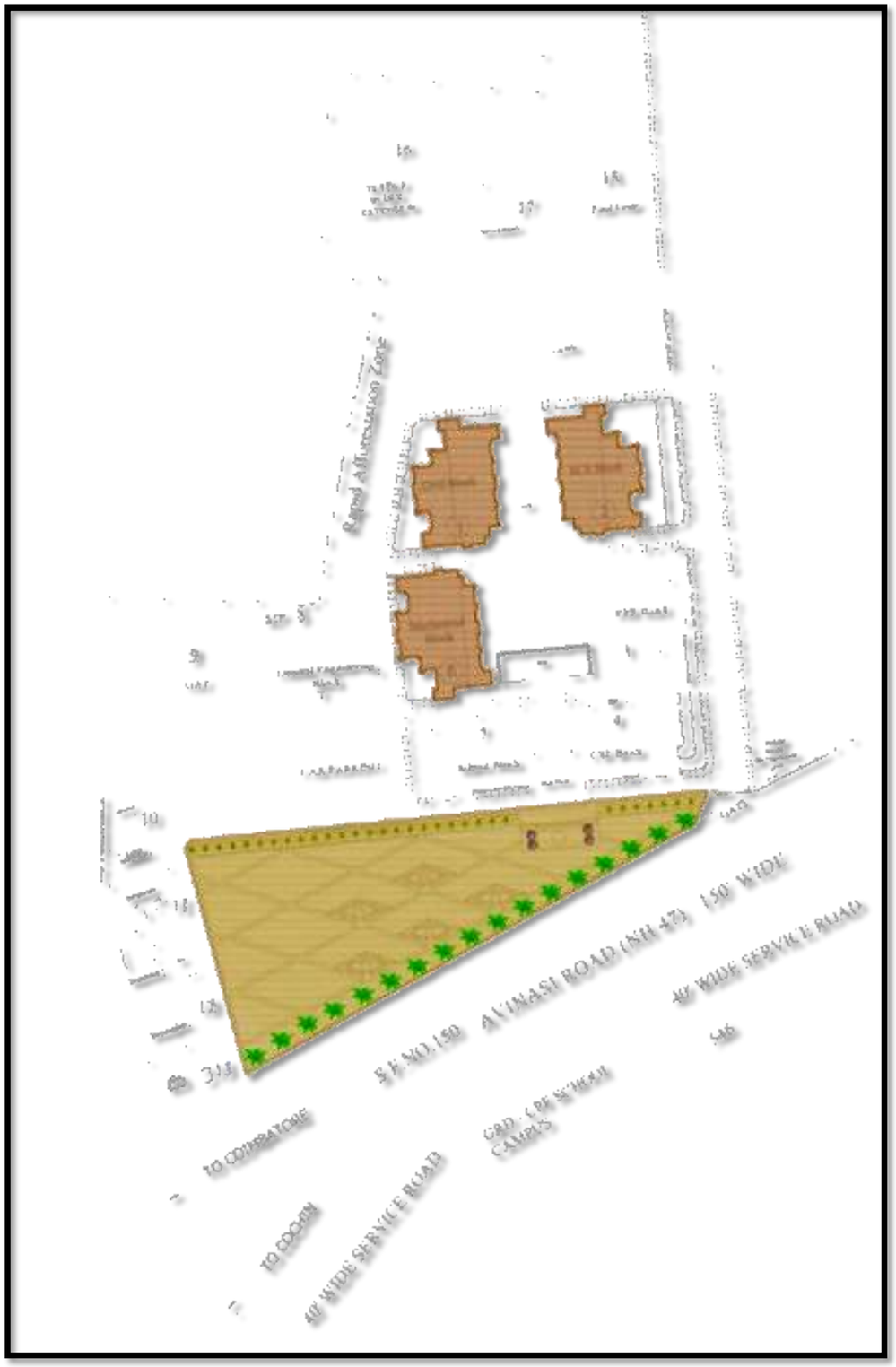

GOOGLE IMAGE SHOWING THE EXISTING TREES AND CUT AT SITE NOW


10/07/2015 10:26


10/07/2015 10:26


17/07/2015 15:15

# SOIL CONSERVATION (POST CONSTRUCTION) CRITERION-3




SHOWING DRAINAGE PATTERN AND DEMARCATING (A) AREAS FROM WHERE TOP SOIL HAS BEEN GATHERED AND (B)AREAS WHERE TOP SOIL LAYING & PRESERVATION IS DONE

AREA OF ONE BLOCK = 1555 SQM
AREA OF ALL THREE BLOCKS= 1555X3= 4665 SQM
VOLUME OF TOP SOIL EXCAVATED: 4665X0.3= 1399 CUM
AREA WHERE TOP SOIL STORED= 12964 SQM
VOLUME OF SOIL STORED = 12964X0.11 =1426 CUM


22 04 20


04 03 2016 10:43

# oil conservation (post construction) criterion-3

# DESIGN TO INCLUDE EXISTING SITE FEATURES- CRITERION-4

# • BIO DIVERSITY AND SELECTION OF VEGETATION AND INTGRATION WITH THE NATIVE LANDSCAPE

• MOST OF THE TREES ON THE SITE ARE DECIDUOUS NATURE OF TREES FOR SEASONAL SOLAR CONTROL.

• DECIDUOUS TREES CAN PREVENT DIRECT SOLAR RADIATION FROM IMPACTING BUILDING IN SUMMER, WHILE ALLOWING RADIATION IN WINTER DUE TO LEAF SHEDDING.

# • LOCATION OF GREEN AND PAVED AREAS


•Rapid afforestation belt is situated at the west side, that act as the barrier against the sun's heat and also act as filter and shelter for cold/harsh winds.

# • USE OF LANDSCAPE ELEMENT AS BUFFER ZONE

•EXISTING AFFORESTATION GREEN BELT PRESERVED THAT ACT AS A BUFFER ZONE.

•MOST OF THE TREES PLANTED ON THE SITE ARE DECIDUOUS NATURE OF TREES FOR SEASONAL SOLAR CONTROL.

• TRESS ARE ACTING AS A BUFFER FOR HOT WINDS , NOISE CONTROL , POLLUTION AND OTHER HARSH CONDITIONS.

# • PLACEMENT OF SELECTIVE SPECIES OF TREES

• Vegetation – existing trees onsite are native to the agro climate zone where the building is being constructed.

• Thus the deciduous trees on the west side are untouched and have been preserved.

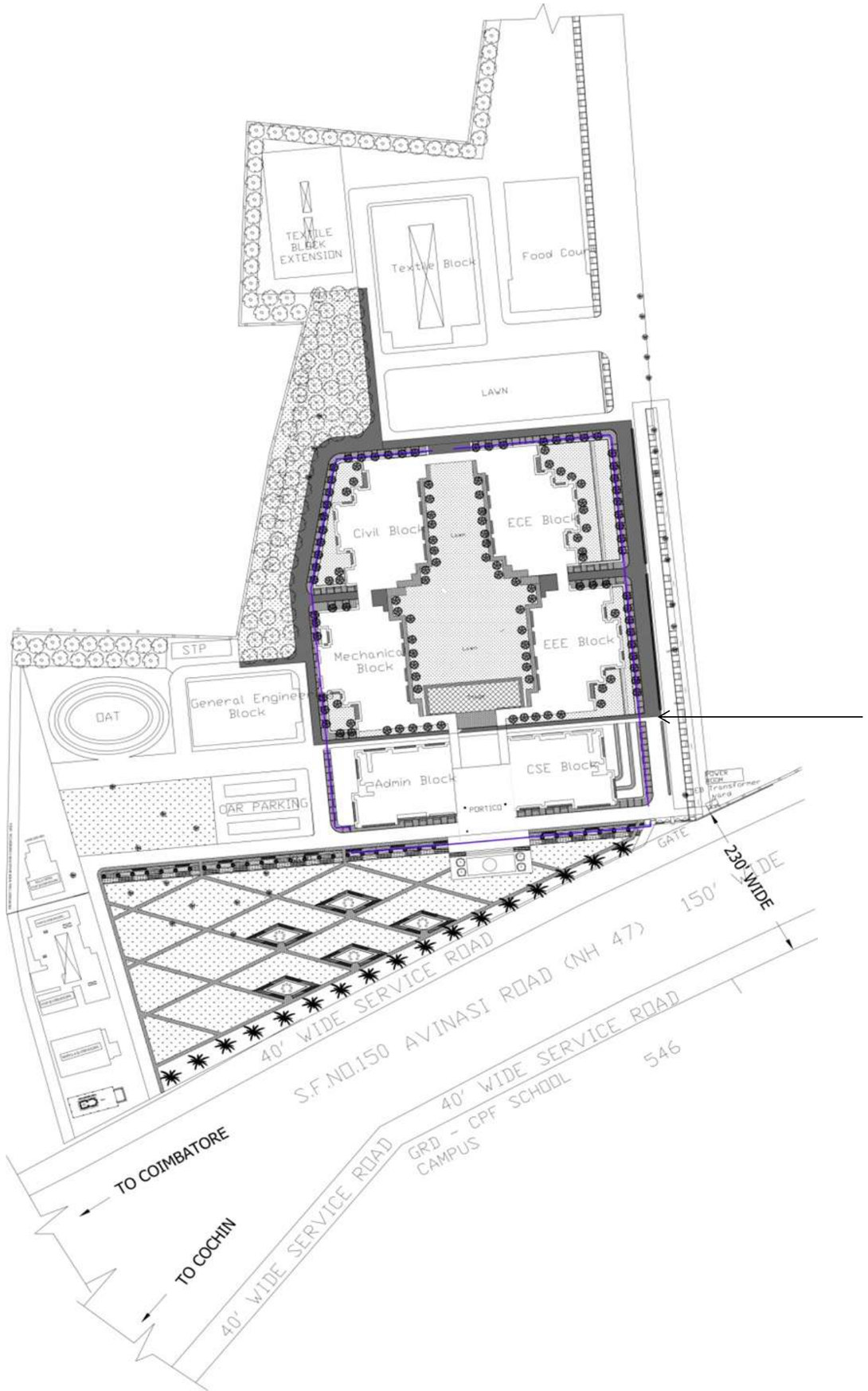
• Deciduous trees can prevent direct solar radiation from impacting the building in summer, while allowing radiation through in winter due to leaf shedding.

# • NATURAL SITE FEATURES FOR RAINS/ STORM WATER DRAINAGE


- The building has been located with minimum disturbance to the preconstruction topography and slop of the land. The natural drainage channel is not disturbed.

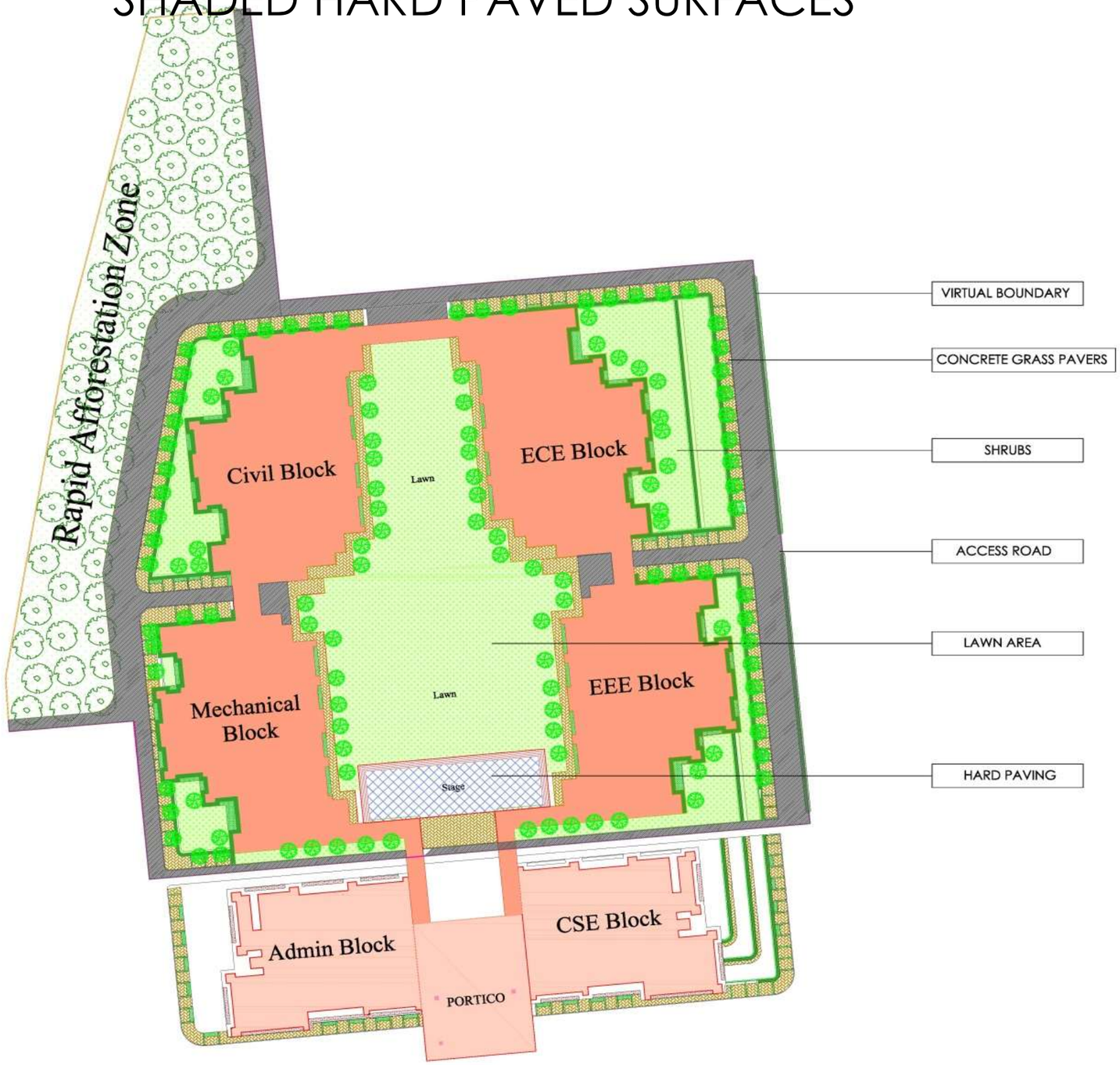
- Thus the Architect has tried to retain as many natural features as possible and design responding to the site conditions.

- GRAVITY – FED SEWER LINES




- THE SEWER LINES HAVE BEEN DESIGNED SO THAT THEY COMPLIMENT THE NATURAL SLOPE OF THE LAND.

# REDUCE HARD PAVING ON SITE/AND OR PROVIDE SHADED HARD PAVED SURFACES




Criterion 05 : **REDUCE HARD PAVING ON SITE**

Description : **Site Plan demarcating the following:-**

- SITE BOUNDARY
- HARD PAVING
- ACCESS ROAD
- SHRUBS
- CONCRETE GRASS PAVERS
- LAWN AREA

**NOTES**

5.2.2 Drawing with area statement clearly showing all paved areas.

1. SITE AREA - 23375.27 Sq.m
2. GROUND COVERAGE (INCLUDING CORRIDORS) - 6656.88 Sq.m
3. TOTAL PAVED AREA - 5586.46 Sq.m
   a. PROPOSED ROAD - 2940.69 Sq.m
   b. PERVIOUS PAVING - 2086.13 Sq.m
   c. IMPERVIOUS PAVING ( EXCEPT ROADS) - 559.64 Sq.m
4. SHADED PAVED AREA - 1173.90 Sq.m
5. LAWN AREA - 4915.48 Sq.m
6. VEGETATION AREA - 6216.44 Sq.m

Net Paved area(%) = (Net Impervious area on ground ( m2 ) / (Total site area - Ground coverage) ( m2 ))*100 = 25.228 %

Imperviousness Factor (%) = ( Total Impervious Effective area per equation 3 ( m2 ) / Total site area ( m2 ) ) * 100 = 52.198 %

(Pervious area + Paving with vegetated roof + Paved area with Solar reflectance index > 0.5) / Total Paved Area = 82.9 %

**PROJECT NAME :**

**PSG INSTITUTE OF TECHNOLOGY & APPLIED RESEARCH**

| | | |
|---|---|---|
| **ARCHITECTS**<br>Ar SANGEET SHARMA | SD SHARMA AND ASSOCIATES | **DRAWING NO:**<br>**Project Code:**<br>14GR0049 |
| **ARCHITECTS SIGNATURE** | | **Date** |
| **CONSULTANTS**<br>PSI :PARTNERSHIPS FOR SUSTAINABLE INDIA | | **NORTH POINT** |
| **CONSULTANT SIGNATURE** | | **SCALE** |

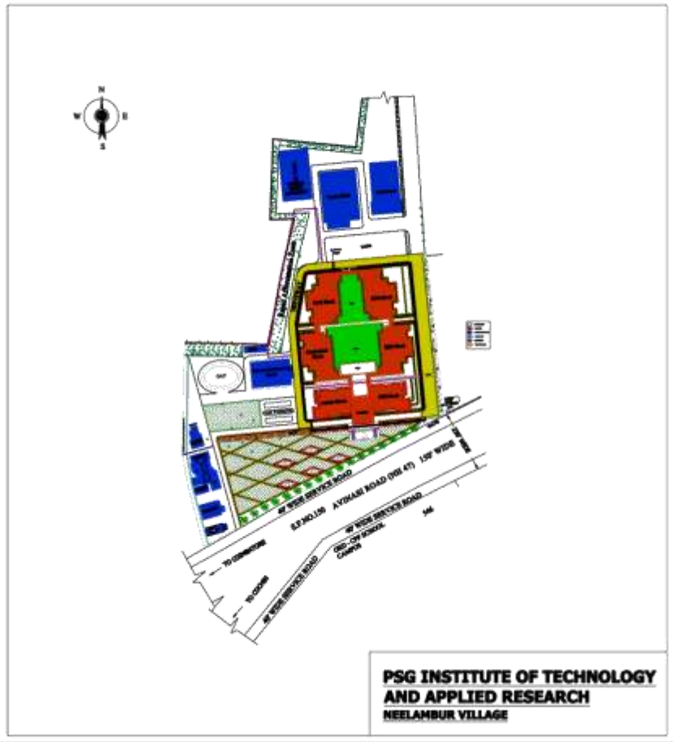
# USED SOLAR PANELS ON PARKING SHEDS

IT WAS HAPPENING …

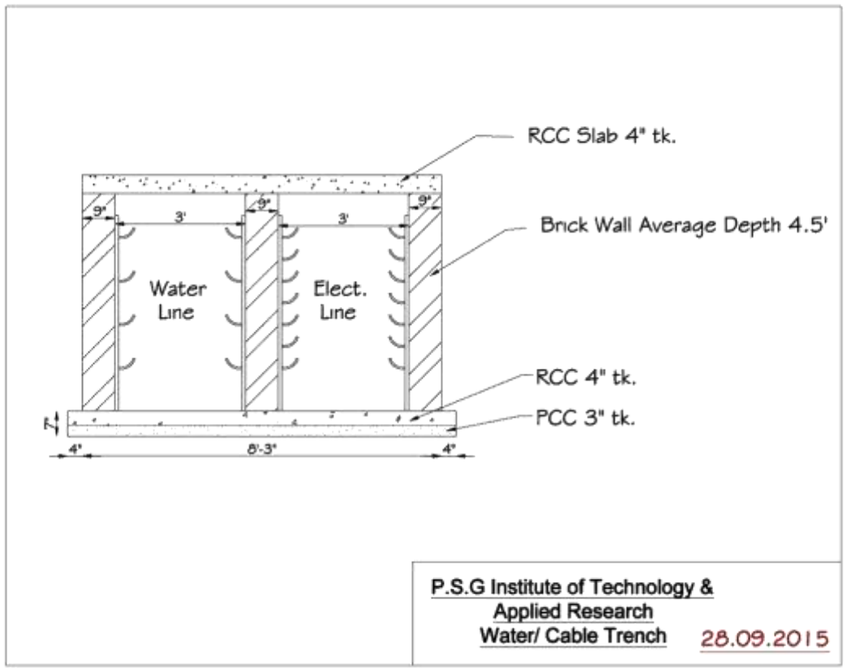
WE COULD DO IT

THE UNDERSTANDING WAS BEGINNING TO MATERIALIZE

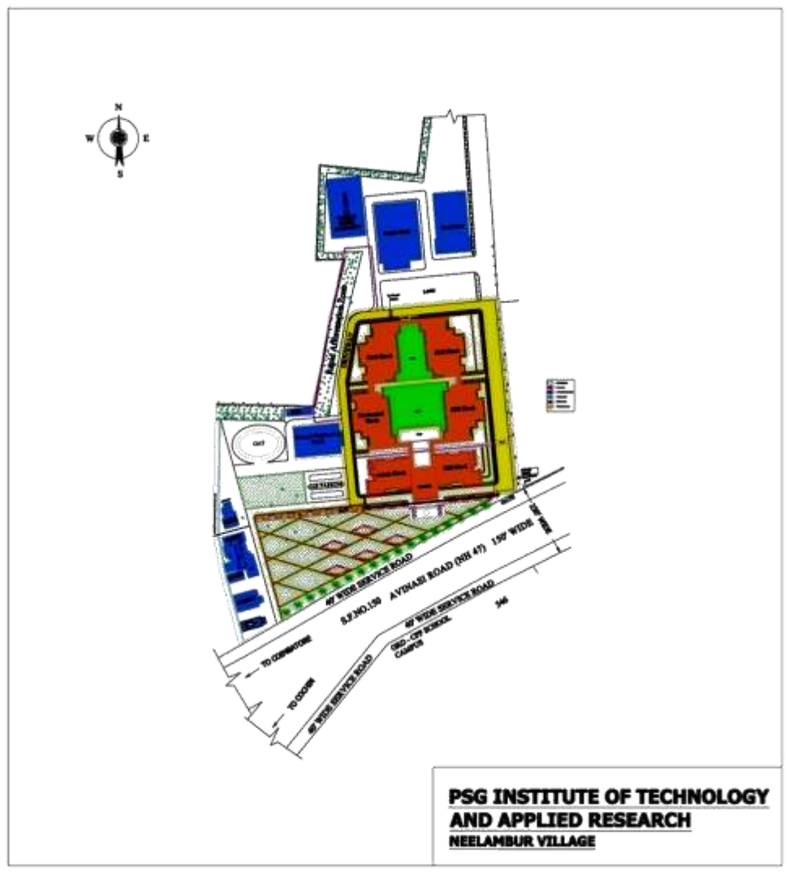
# PLAN UTILITIES EFFICIENTLY AND OPTIMIZE ON-SITE CIRCULATION EFFICIENCY –Criterion-7




Site plan in CAD file with section of aggregate utility corridor with utility lines




Site plan in CAD file with section of aggregate utility corridor with utility lines




Site plan in CAD file showing that all services along with the pedestrian and vehicular paths are consolidated

# SANITATION/SAFETY FACILITIES-CRITERION-8

PROOF IN FORM OF PHOTOGRAPHS SHOW THAT THE SAFETY NORMS AND PROCEDURES AS COMMITTED TO BE COMPILED WITH ARE INCLUDED IN SCOPE OF WORK OF THE CONTRACTOR





PROOF IN FORM OF PHOTOGRAPHS SHOW THAT THE SAFETY NORMS AND PROCEDURES AS COMMITTED TO BE COMPILED WITH ARE INCLUDED IN SCOPE OF WORK OF THE CONTRACTOR

## LABOUR TOILETS AT SITE

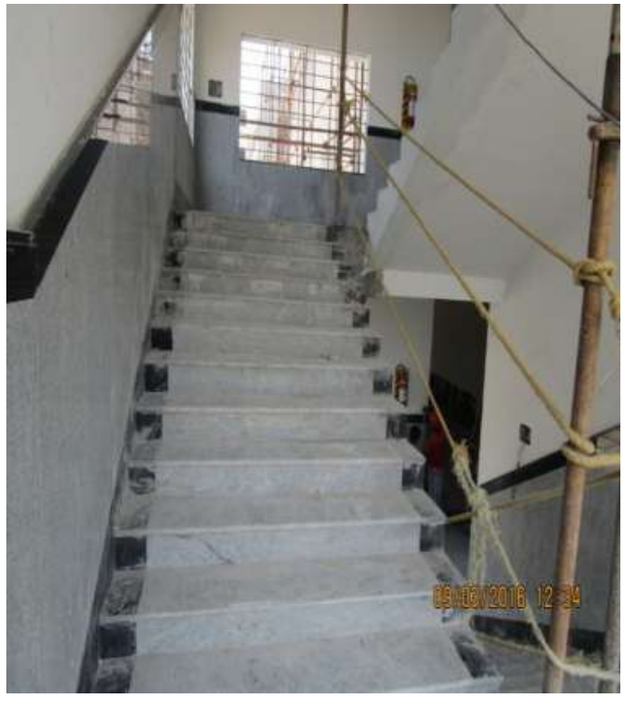



# SAFETY AWARNESS  MEETING ON 02.02.2016




# SAFETY  BARRICADING ALONG THE STAIRCASE

PROOF IN FORM OF PHOTOGRAPHS SHOW THAT THE SAFETY NORMS AND PROCEDURES AS COMMITTED TO BE COMPILED WITH ARE INCLUDED IN SCOPE OF WORK OF THE CONTRACTOR



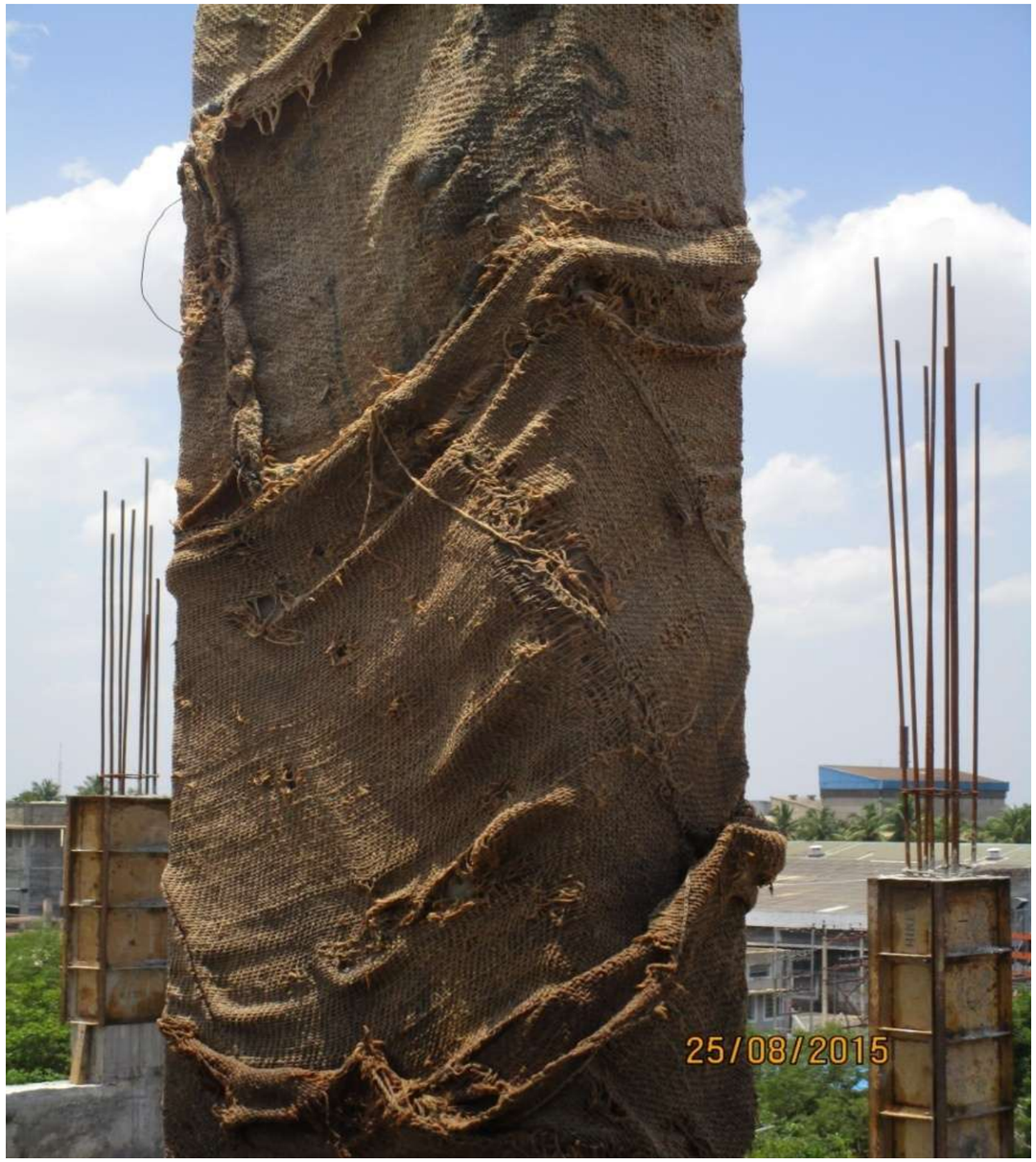
# REDUCE AIR POLLUTION DURING CONSTRUCTION-CRITERION-9

RELEVANT PHOTOGRAPHS SHOWING THAT AIR POLLUTION PREVENTION MEASURES ARE MANDATORY TO BE ADOPTED BY CONTRACTORS DURING CONSTRUCTION



# EFFICIENT WATER USE DURING CONSTRUCTION

## METHOD OF USING GUNNY BAGS FOR CUIRNG




# REDUCE LANDSCAPE WATER REQUIREMENT-Criterion-10

DON'T GET CARRIED AWAY BY VAGUE TECHNICAL TERMS OF GRIHA

THEY LOVE TO CONFUSE

BUT FEAR NOT, GO ON

# EFFICIENT WATER USE DURING CONSTRUCTION-Criterion-12

## WATER PONDING AROUND CURING AREA


RMC

TO

19-02-2016

M/s.Niketa Constructions

SANKRANTI, 4th Floor,

356, Trichy Road, Singanallur

Coimbatore – 641005

Sub: Using OF Fly ash

Dear Sir,

We Q RMC supplied M25 G ready mixed concrete to your project site – PSG I Tech - E6 block Neelambur, Coimbatore. The concrete M25 G which we supplied contains Fly ash of 26% in total cementations content as per the design mix mutually agreed to producing the concrete. This is for your kind information.

Thanks/Regards

For Q RMC

Authorized Signature

Works : S.F.No. 83, Arasur Village, Sulur Tk, Coimbatore - 641 407. e.mail : plantqrmc@qrmc.in
TIN : 33746262247, CST No : 757323 Dt : 23-10-2014.

ADITYA BIRLA

UltraTech

Our Ref: UTCL/QC/02/12/2015

Date: 02.12.2015

To:

M/s. Srinivasan Associates Pvt.Ltd,

PSG Commercial Block,

Neelambur,

Coimbatore.

Kind Attention: Mr.R.Subburaman

Dear Sir,

Please find herewith the mix design details attached for the various grades of concrete to be supplied to your PSG Neelambur site for the month of December-2015.

| Grade of Concrete | M10 |
|---|---|
| Cementitious | 300 |
| River Sand | 769 |
| 20mm | .710 |
| 12mm | 454 |
| Water | 165 |
| Admixture | 0.90 |
| | |

| Grade of Concrete | M25 |
|---|---|
| Cement | 260 |
| Flyash | 80 |
| River Sand | 802 |
| 20mm | 690 |
| 12mm | 436 |
| Water | 170 |
| Admixture | 1.65 |

Regards,

M.A.Prasanna

City Head Operations / QC.

UltraTech CONCRETE

UltraTech Cement Limited
Unit : UltraTech Concrete Coimbatore
SF No. 506/A1, Sokir Railway Feeder Road,
Kurumbapalayam, Muthugoundan Pudur (PO)
Coimbatore - 641 406.

Tel : 0422-3246773 / 9952888201
Website : www.ultratechconcrete.com

Registered Office :
'B' Wing, Ahura Centre,
2nd Floor, Mahakali Caves Road,
Andheri (E), Mumbai - 400 093.

CIN:L26940MH2000PLC128420

THE RAMCO CEMENTS LIMITED

TEST CERTIFICATE

IS 1489

CM/L-6945492

PORTLAND POZZOLANA CEMENT (FLYASH BASED)

Tested according to IS:1489(Part-1)-1991

Govindapuram, Ariyalur - 621 713
TamilNadu

Date of Despatch : 26/11/2014 To 02/12/2014

Week Number : 48/2014

| Test Particulars | Results Obtained | Requirements of IS:1489(Part-1)-1991 |
|---|---|---|
| **I. PHYSICAL REQUIREMENTS** | | |
| 1.Fineness (M²/KG) | 350 | Minimum 300 |
| 2.Normal Consistency (%) | 33.00 | |
| 3.Setting Time (Minutes) | | |
| a.Initial | 150 | Minimum 30 |
| b.Final | 265 | Maximum 600 |
| 4.Soundness | | |
| a.Le-Chatlier Expansion (mm) | 1.1 | Maximum 10 |
| b.Autoclave Expansion (%) | 0.05 | Maximum 0.80 |
| 5.Compressive Strength (MPa) | | |
| a.72 +/- 1 Hrs (3 Days) | 27.7 | Minimum 16 |
| b.168 +/- 2 Hrs (7 Days) | 36.9 | Minimum 22 |
| c.672 +/- 4 Hrs (28 Days) | 52.6 | Minimum 33 |
| 6.Drying Shrinkage (%) | 0.04 | Maximum 0.15 |
| **II. CHEMICAL REQUIREMENTS** | | |
| 1.Declared Percentage of Pozzolana (X) (%) | 26.00 | Minimum 15 & Maximum 35 |
| 2.Insoluble Residue (% by Mass) | 18.59 | Maximum X+4.0(100-X)/100 |
| 3.Magnesia (% by Mass) | 0.85 | Maximum 6.0 |
| 4.Sulphuric Anhydride (% by Mass) | 2.60 | Maximum 3.0 |
| 5.Total Loss on Ignition (% by Mass) | 2.17 | Maximum 5.0 |
| 6.Chloride Content (% by Mass) | 0.010 | Maximum 0.1 |

The Cement Conforms to IS:1489(Part-1)-1991 specification for Portland Pozzolana Cement in all aspects.

30.11.15

SR.DGM-PRODN. & QC

IS/ISO 9001 CERTIFIED

# UTILIZATION OF FLY ASH IN BUILDING STRUCTURE-CRITERION-15

Mfrs : Fly Ash Bricks & Blocks

C R & Associates

Off : No. 79/2 IInd floor, T.V. Swamy Road East,
R.S. Puram, Coimbatore 641002.
Fact : S.F.No. 4/2A, Chinnaneeli Thuppu, Sriuvani Main Road,
Thethipalayam (p.o.), Coimbatore - 641 010.
TIN : 33231923087 Mobile : 98422 40009.
E mail : crandassociatescbe@gmail.com

To,

M/s. NIKETA CONSTRUCTION
SINGANALLUR
COIMBATORE.

Dear Sir ,

The following is the mix ratio for our fly ash bricks

1) Flyash - 45%
2) Lime - 11%
3) Cement - 5%
4) Crusher powder - 39%

Thanking you

With regards
CR & Associates

# REDUCE VOLUME, WEIGHT, AND CONSTRUCTION TIME BY ADOPTING EFFICIENT TECHNOLOGIES (SUCH AS PRE-CAST SYSTEMS)-CRITERION 16

WE HAVE USED LOW ENERGY MATERIALS LIKE AEC AND ACC BLOCKS

# USE LOW-ENERGY MATERIAL IN INTERIORS- CRITERION 17
# USE LOW-VOC PAINTS/ADHESIVES/SEALANTS - CRITERION 26

- DOLPUR STONE USED FOR FAÇADE, THIS IS A NATURAL MATERIAL.
- GRANITE USED FOR FLOORING WHICH AGAIN IS A NATURAL MATERIAL
- WATER BASED ADHESIVES AND WATERPROOFING SOLVENTS USED.
- WINDOWS ARE USING GLASS WITH RECYCLED CONTENT.
- BROKEN TILES ARE JOINED AND REUSED FOR PARKING AREA AND COVERING NON CRITICAL AREAS.

# REDUCTION IN WASTE DURING CONSTRUCTION- CRITERION-22

# STORAGE AND DISPOSAL OF WASTES CRITERION 24


SCRAP
YARD


18/07/2015 14:33


18/07/2015 16:02


18/07/2015 14:06


18/07/2015 14:03

# ACOUSTICAL TEST REPORT- CRITERIA-29

| Report No : | EL-NL-NE-4-02-2016 | Report Date : | 22.02.2016 |
|---|---|---|---|
| Customer Name & Address<br>M/s. PSG Institute of Technology & Applied Research<br>Neelambur - Avinashi Road<br>Coimbatore - 641062 | | Sample Reference No : | EL-NL-NE-4-02-2016 |
| | | Sample Description : | Sound |
| | | Monitoring By : | Laboratory |
| | | Monitoring Date : | 18.02.2016 |
| | | Data Received On : | 20.02.2016 |
| | | Sampling Method : | IS:9989-1981(Reaffirmed 2001) |
| | | Monitoring Unit : | dB (A) |
| | | Monitoring Time: | 10.00 – 11.55 a.m. |
| | | Category: | Day Time (6.00 a.m - 10.00 p.m) |

| S.No. | Name of the Location | Reading No. | | | | | | | | | | Min | Max | Leq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | [redacted] | | 6 | 7 | 8 | 9 | 10 | | | |
| 1. | E6 - East Side | 61.3 | 61.7 | 59.2 | | | 62.1 | 65.1 | 66.2 | 72.4 | 59.7 | 59.2 | 72.4 | 69.4 |
| 2. | E6 - North Side | 66.8 | 66.1 | 61.1 | 59.0 | 57.7 | 65.2 | 70.9 | 60.5 | 60.2 | 65.6 | 57.7 | 70.9 | 67.9 |
| 3. | E6 - West Side | 64.9 | 69.2 | 69.5 | 65.7 | 69.6 | 69.0 | 54.0 | 59.9 | 56.4 | 64.6 | 54.0 | 69.6 | 66.6 |
| 4. | E6 - South Side | 59.6 | 58.4 | 66.7 | 62.4 | 58.5 | 58.7 | 57.7 | 54.0 | 59.9 | 55.2 | 54.0 | 66.7 | 63.7 |
| 5. | E6 First Floor - Class Room 2 | 63.9 | 62.6 | 59.0 | 59.1 | 60.2 | 63.0 | 59.8 | 59.3 | 61.1 | 63.4 | 59.0 | 63.9 | 60.9 |
| 6. | E6 First Floor - Faculty Cabin | 62.8 | 61.4 | 64.0 | 65.6 | 63.0 | 64.2 | 61.9 | 63.1 | 51.7 | 55.1 | 51.7 | 65.6 | 62.6 |
| 7. | E6 First Floor - i Lensys Projector Application Centre | 63.0 | 55.5 | 58.0 | 59.6 | 56.2 | 59.0 | 65.6 | 56.3 | 58.3 | 58.2 | 55.5 | 65.6 | 62.6 |
| 8. | E6 Ground Floor - CAM Lab | 62.4 | 60.8 | 59.4 | 63.5 | 63.3 | 61.0 | 61.1 | 63.2 | 64.1 | 62.0 | 59.4 | 64.1 | 61.1 |
| 9. | E6 Ground Floor - Canteen | 56.6 | 61.9 | 60.6 | 63.8 | 76.4 | 62.1 | 61.3 | 64.4 | 64.1 | 62.4 | 56.6 | 76.4 | 73.4 |
| 10. | E6 Ground Floor - Seminar Hall | 58.6 | 61.4 | 62.5 | 58.9 | 57.8 | 55.6 | 64.1 | 59.3 | 69.4 | 66.1 | 55.6 | 69.4 | 66.4 |
| 11. | E6 Second Floor - CAD Lab | 57.8 | 62.2 | 62.7 | 62.9 | 64.4 | 69.5 | 64.3 | 62.0 | 65.2 | 63.7 | 57.8 | 69.5 | 66.5 |
| 12. | E6 Second Floor - Class Room 3 | 65.0 | 61.6 | 62.5 | 66.0 | 63.0 | 61.9 | 62.1 | 63.0 | 62.2 | 57.7 | 57.7 | 66.0 | 63.0 |
| 13. | E6 Second Floor - Faculty Cabin | 66.1 | 60.7 | 59.9 | 60.6 | 57.3 | 56.7 | 61.9 | 69.9 | 72.5 | 59.2 | 56.7 | 72.5 | 69.5 |
| 14. | E6 Third Floor - Class Room 7 | 58.6 | 64.4 | 68.0 | 65.5 | 59.5 | 59.3 | 58.8 | 59.9 | 65.1 | 58.5 | 58.5 | 68.0 | 65.0 |
| 15. | E6 Third Floor - Drawing Hall | 57.4 | 57.9 | 63.4 | 66.1 | 65.6 | 64.0 | 61.0 | 65.1 | 64.4 | 60.3 | 57.4 | 66.1 | 63.1 |
| 16. | E6 Third Floor - Facu ty Cabin | 65.1 | 64.6 | 64.7 | 68.1 | 61.6 | 60.7 | 61.3 | 59.3 | 62.2 | 60.2 | 59.3 | 68.1 | 65.1 |
| Permissible Limit for Noise as per the Factories Rules, 1950 | | | | | | | | | | | | Maximum 90.0 | | |

TO ENSURE ACCESSIBILITY /USABILITY OF THE BUILDING AND ITS FACILITIES BY EMPLOYEES, VISITORS, AND CLIENTS WITH DISABILITIES-CRITERION-31

AS PER THE NATIONAL BUILDING CODES AND OTHER POLICIES TO ENSURE NON-DISCRIMINATION AGAINST PERSONS WITH DISABILITIES, THE PROJECT HAS BEEN PROVIDED WITH THE FOLLOWING:

1. RAMPS WITH THE SLOPE OF 1:10 HAVE BEEN PROVIDED AT ALL APPROACHES AND ENTRANCE STAIRCASES.

2. THE BLOCK HAS BEEN PROVIDED WITH TOTALLY EQUIPPED TOILET FOR THE DISABILITIES AS PER STANDARDS.

3. THE TOILET IS AS PER THE BUILDING NORMS AND IS PROVIDED WITH THE REQUIRED GRAB BARS ETC...(DRAWINGS ATTACHED).

4. THE LIFT FOR VERTICAL MOVEMENT AND CIRCULATION HAS BEEN PROVIDED. (DRAWING ATTACHED).

5. THE ABOVE FEATURES PROVE THE NON-DISCRIMINATION AGAINST PERSONS WITH DISABILITIES.

PROVISION OF DUAL SWING OPERABLE DUAL DOOR SHUTTERS

PROVISION OF WASHBASIN AT LOWER LEVEL FOR EASY ACCESS

PROVISION OF GRAB BARS FOR THE DISABLED TOILET.

PROVISION OF RAMP FOR THE DISABLED PERSON TO ACCESS THE BUILDING.

SEE, WE COULD DO IT!

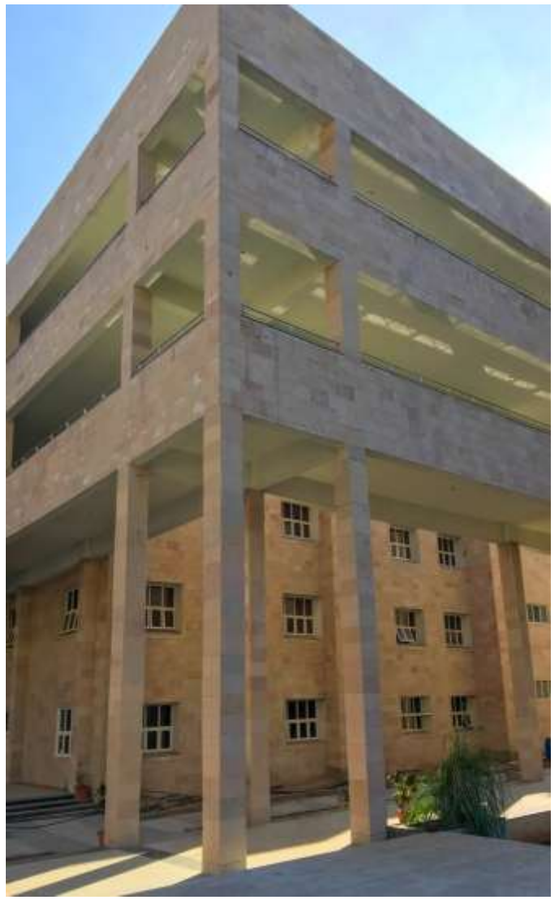
YOU ALL CAN DO IT.

WE ALL CAN DO IT.

IT WAS SYSTEMATIC.

GRIHA GIVE US GUIDELINES AND ENFORCED UPON US TO BE CONCERNED ABOUT HEALTH, HUMANS VALUES SAFETY ACHIEVEMENTS SUSTAINABILITY, DESIGN FACTORS, ENERGY, CONSERVATION, PLANTS, HORTICULTURE, SOLAR ENERGY AND CORRECT USE OF MATERIALS.


PSG iTech




PSG

# OUR FIRST ATTEMPT ACCORDED US THE EXEMPLARY GRIHA AWARD 2017

'GRIHA *Exemplary Performance Award*'

**GRIHA COUNCIL**

*is pleased to acknowledge*

**PSG Institute of Technology & Applied Research**

**Coimbatore, Tamil Nadu**

*Designed by Ar. Sangeet Sharma, Chandigarh*

*for the Demonstration of*

*Passive Architecture Design*

*Under*

**GRIHA** *Rating*

*The 9th* **GRIHA** *Summit*
*18th – 19th December, 2017*
*New Delhi*

*Sanjay Seth*
*Chief Executive Officer*
**GRIHA** *Council*

A GREAT BEGINNING HAD BEGAN

I APPLIED FOR EXAMINATION TO LEARN GRIHA AND BECOME GRIHA EVALUATOR

FAIL TWICE

BUT ULTIMATELY ACHEIEVED.

NOW I TEACH SUSTAINABLE ARCHITECTURE AND I PREACH **GRIHA** AS THE DENOMINATOR FOR PERFECT ARCHITECTURAL PLANNING

ALL THE BUILDINGS IN MY OFFICE ARE NOW OFFICIALLY **GRIHA GREEN**

# THANK YOU GRIHA

# THANK YOU ALL