SYNERGISM
TOWARDS A NET ZERO COMMUNE
ENVIROMENTAL ISSUE
CLIMATE CHANGE MITIGATION AND ADAPTATION
WE ARE THE FIRST GENERATION TO FEEL THE EFFECT OF CLIMATE CHANGE AND THE LAST GENERATION WHO CAN DO SOMETHING ABOUT IT
- BARACK OBAMA

SUSTAINABLE URBAN DEVELOPMENT AND MOBILITY

SITE INTRODUCTION
LOCATION
NOIDA IS A CONTRIVED CITY LOCATED IN UTTAR PRADESH, INDIA, AMIDST A THRIVING INDUSTRIALIZED CONTEXT.

SITE ANALYSIS

CLIMATE OF NOIDA
TEMPERATURE AND PRECIPITATION

AIR QUALITY INDEX

EXISTING SITE
URBAN HEAT ISLAND EFFECT

MACRO CLIMATE

SUSTAINABLE URBAN DEVELOPMENT IS A WHOLESAOME APPROACH THAT CEASES THE CITIES FROM DISENTEGRATING. IT ENCOURAGES INCLUSIVE DEVELOPMENT, AN ESSENTIAL FOUNDATION FOR SUSTAINABILITY, EQUITY, SHARED PROSPERITY, AND CIVIL SOCIETY.

NEED FOR GREEN BUILDING

INCONSIDERATE MUST VS OPEN RATIO.

CATRGORIZED BUILDING HEIGHTS;
LOW RISE
HIGH RISE

ROAD NETWORK EXISTING CIRCULATION;
METRO
PRIMARY ROADS
SECONDARY ROADS
TERTIARY ROADS

GREEN SPACES AND WAKEN LANDS;
BAKED LANDS
GREEN LANDS

WIND BLOWS FROM THE WEST AND EACH OF THE FOUR CARDINAL DIRECTIONS.

THE SITE IS LOCATED ON FLAT LAND WITH DENSE VEGETATION IN ITS SURROUNDING AREAS, AS WELL AS AN EXISTING STRUCTURE THAT REDUCES SOLAR HEAT RADIATION.

SYNERGISM
TOWARDS A NET ZERO COMMUNE

ALL DIMENSIONS ARE IN MM

GRIHA TROPHY 2022-23

DIASTROFIC CODE
65GRIHA-19

INFERENCES AND CATEGORIES ARE ILLUSTRATED BY FORMER SITE OBSERVATIONS.
**SYNERGISM**

**TOWARDS A NET ZERO COMMUNE**

**DESIGN DEVELOPMENT**

**AREA STATEMENT**

<table>
<thead>
<tr>
<th>Space</th>
<th>Area (in sq. m/ sq. ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Floor Area</td>
<td>11,000</td>
</tr>
<tr>
<td>Built-Up Area</td>
<td>10,500</td>
</tr>
<tr>
<td>Ground Floor</td>
<td>2,300</td>
</tr>
<tr>
<td>Basement</td>
<td>505</td>
</tr>
<tr>
<td>Lift/Plan Area</td>
<td>120</td>
</tr>
<tr>
<td>Parking</td>
<td>30</td>
</tr>
</tbody>
</table>

**BASEMENT PLANS**

**VERTICAL CIRCULATION**

There exist 5 lift cores within the hospital placed centrally for ensuring easy circulation.

**FLOOR PLATES**

- **Ninth and Tenth Floor**
  - Vertical Forest

- **Eighth Floor**
  - Single Bed Room

- **Seventh Floor**
  - Twin Bed Room

- **Sixth Floor**
  - Twin Bed Room

- **Fifth Floor**
  - General Ward Twin Bed Room

- **Fourth Floor**
  - Laboratory, Gynaecology Unit, NICU, Single Bed Room

- **Third Floor**
  - Operation Theatre ICU

- **Second Floor**
  - Operation Theatre ICU

- **First Floor**
  - Blood Bank Laboratories OPD

**HOSPITAL COMPONENTS**

- **Exterior Paint - Biosphere Premium**
  - Quantity: 2,000 m²
  - Cost: ₹1,000,000

- **Agri-Paint (Bio-Acrylic Paint) - Interior**
  - Quantity: 2,000 m²
  - Cost: ₹1,500,000

- **Flooring - Mannohemolone Olimex**
  - Quantity: 2,000 m²
  - Cost: ₹2,500,000

**FACADE**

- The north, south, and east facades are affixed with panels of vertical green walls and mechanical louvers. The collected air by louvers is filtered and utilized in HVAC system.

**ENVIRONMENTAL PROFILE**

<table>
<thead>
<tr>
<th>Environmental Profile</th>
<th>Normal Wall (%)</th>
<th>Green Wall (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating</td>
<td>100</td>
<td>79</td>
</tr>
<tr>
<td>Indoor Air Quality Improvement</td>
<td>0</td>
<td>55</td>
</tr>
<tr>
<td>Noise Reduction</td>
<td>12</td>
<td>57</td>
</tr>
<tr>
<td>Reduction in Energy Use</td>
<td>12</td>
<td>60</td>
</tr>
</tbody>
</table>

**BENEFITS**

- Biophilia
- Indoor Air Quality
- Reduce SBS
- Noise Control

**MECHANISM**

The louvers work on a bearing mechanism, which adjusts with changing wind flow.

**ALL DIMENSIONS ARE IN MMT**

GRIHA Trophy 2022-23

Registration code: 65GRIHA-19
IMPACT ANALYSIS

GREEN BUILDINGS PROMOTE EFFICIENCY OF BUILDINGS. ENERGY OPTIMIZATION AND REDUCTION OF ENERGY CONSUMPTION CAUSING SOCIAL, ENVIRONMENTAL, AND ECONOMIC BENEFITS.

ECONOMIC BENEFITS OF THE ORGANIZATION

ENHANCE EXISTING ECOSYSTEMS

ECOLOGICAL ENHANCEMENT MODIFIES IMPROVES HABITAT FOR PLANTS AND ANIMALS WHILE PROTECTING HUMAN HEALTH AND THE ENVIRONMENT.

CONSERVE AND RESTORE NATURAL RESOURCES

ECOSYSTEM RESTORATION IS VITAL TO CLIMATE CHANGE, POVERTY, AND BIODIVERSITY, AND THE SUSTAINABLE USE OF ECOSYSTEMS FOR OUR LIVELIHOODS AND ECONOMIES.

FUTURE ENVISION: PHASEAL DEVELOPMENT

THE GREEN CONCEPTS AND TECHNIQUES IN THE BUILDING SECTOR CAN HELP ADDRESS ISSUES LIKE WATER EFFICIENCY, ENERGY EFFICIENCY, REDUCTION IN Fossil FUEL USE, IN COMPOSTING, HANDLING OF CONSUMER WASTE, AND CONSERVING NATURAL RESOURCES MAKING FUTURE SAFE AND HABITABLE.

PRESENT DAY SCENARIO

AFTER 5 YEARS

"SUSTAINABLE DEVELOPMENT IS THE PATHWAY TO THE FUTURE WE WANT FOR ALL. IT OFFERS A FRAMEWORK TO GENERATE ECONOMIC GROWTH, ACHIEVE SOCIAL JUSTICE, EXERCISE ENVIRONMENTAL STEWARDSHIP AND STRENGTHEN GOVERNANCE."

- BAN KI MOON

SYNERGISM
TOWARDS A NET ZERO COMMUNE

GRIHA Trophy 2022-23

Registration code: 65GRIHA-19
Sustainable Site Planning
- Criterion 1: Green Infrastructure
- Criterion 2: Green Infrastructure Strategies
- Criterion 3: Design to Minimize Life Cycle

Construction Management
- Criterion 4: Air and Soil Pollution Control
- Criterion 5: Topsoil Preservation
- Criterion 6: Construction Management Practices

Energy Optimization
- Criterion 7: Energy Optimization
- Criterion 8: Renewable Energy Utilization
- Criterion 9: Low GWP and GMP Materials

Occupant Comfort
- Criterion 10: Visible Comfort
- Criterion 11: Thermal and Acoustic Comfort
- Criterion 12: Indoor Air Quality

Water Management
- Criterion 13: Water Demand Reduction
- Criterion 14: Water Waste Treatment
- Criterion 15: Water Management
- Criterion 16: Water Quality and Self-Sufficiency

Solid Waste Management
- Criterion 17: Waste Management Post Occupancy
- Criterion 18: Organic Waste Treatment On-Site

Sustainable Building Materials
- Criterion 19: Utilization of Alternative Materials in Building
- Criterion 20: Reduction in GWP Through Life Cycle Assessment
- Criterion 21: Alternative Materials for External Site Development

Life Cycle Costing
- Criterion 22: Life Cycle Cost Analysis

Socio-Economic Strategies
- Criterion 23: Safety and Sanitation for Construction Workers
- Criterion 24: Local Materials
- Criterion 25: Dedicated Facilities for Service Staff
- Criterion 26: Positive Social Impact

Performance: Metering and Monitoring
- Criterion 27: Project Commissioning
- Criterion 28: Smart Monitoring
- Criterion 29: Operation and Maintenance Protocols

Innovation
- Criterion 30: Innovation

GRIHA Trophy 2022-23
Registration code: 65GRIHA-19