Guest house building at IIT Bombay

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Details</th>
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<tbody>
<tr>
<td>Location</td>
<td>Mumbai, Maharashtra</td>
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<tr>
<td>Site Area</td>
<td>7,671 m²</td>
</tr>
<tr>
<td>Built-up Area</td>
<td>12,342 m²</td>
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<tr>
<td>Air-Conditioned Area</td>
<td>7,903 m²</td>
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<tr>
<td>Non-Air-Conditioned Area</td>
<td>4,439 m²</td>
</tr>
<tr>
<td>Typology</td>
<td>Commercial building</td>
</tr>
<tr>
<td>Energy Consumption Reduction</td>
<td>75.46% reduction in energy consumption compared to GRIHA benchmark</td>
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<tr>
<td>EPI</td>
<td>110.42 kWh/m²/year</td>
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<tr>
<td>Renewable Energy</td>
<td>Rated capacity of solar PV installed on site is 45 kWp</td>
</tr>
<tr>
<td>GRIHA Provisional Rating</td>
<td>4 Star Rating (Version: 3.1)</td>
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<tr>
<td>Year of Completion</td>
<td>2018</td>
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The following strategies were adopted to reduce the building impact on the natural environment:

**Sustainable Site Planning:**
- 386 m³ top soil was preserved within the campus and reused for landscaping.
- Site was screened with 3 m high barricading; wheel washing was provided for vehicles entering the site and water was sprinkled on site to control dust pollution.
- Out of 63 existing mature trees, 11 mature trees were preserved and in addition compensatory plantation of 195 trees was done on site.

**Water Management:**
- Reduction of 50.98% from the GRIHA base case has been demonstrated in building water demand by installing water efficient fixtures.
- Reduction of 37.49% from the GRIHA base case has been demonstrated in the landscape water demand.
- Gunny bags were used for curing structural columns and ponding technique was used for curing of slabs.

**Energy Optimization:**
- For achieving visual comfort:
  - 94% of the total living area is day-lit and meets the daylight factor as prescribed by NBC 2005.
  - 100% of the outdoor lights have been connected with automatic switches.
- For achieving thermal comfort:
  - EPI reduction of 75.46% from the GRIHA base case has been demonstrated through the integration of high-performance systems.
  - Water cooled scroll chiller with IPLV 6.40 and COP of 4.45 have been installed which complies with ECBC.

**Renewable Energy Technology installed on Site:**
- Solar Photovoltaic system of capacity 45kWp is installed on-site in the project for complying with the mandatory clause.

**Sustainable Building Materials:**
- AAC blocks with 65% fly ash content by volume have been used in the project.
- Kota stone and vitrified tiles were used as a flooring material in the building.

**Waste Management:**
- Multi-colored bins have been provided on each floor level to collect and segregate waste at source.
- Central waste collection area has been provided for storage of segregated waste on site.
- 100% of the organic waste will be sent to the centralized bio-methanation plant of 2-ton capacity that has been provided within the IIT campus.

**Integrated Design Team:**
- Client: IIT Bombay
- Project Coordinator: K Lakshminarayanan
- Principal Architect: SSA
- Landscape Architect: SSA
- Project Management: Shrikhande Consultants Pvt. Ltd.
- Structural Consultant: More Structural Consultant
- Electrical Consultant: Aecom
- Green Building Design and Certification: Ecofirst Services Limited