



## H1-Type Residential Building, IIT Bombay

<b>Location</b>	: Indian Institute of Technology - Bombay, Mumbai
<b>Site Area</b>	: 2900 m <sup>2</sup>
<b>Built-up Area</b>	: 5238.84 m <sup>2</sup>
<b>Air-Conditioned Area</b>	: 1829.16 m <sup>2</sup>
<b>Non-Air-Conditioned Area</b>	: 2272.95 m <sup>2</sup>
<b>Typology</b>	: Residential
<b>Energy Consumption Reduction</b>	: 34.3% reduction in energy consumption compared to GRIHA benchmark
<b>Energy Performance Index (EPI)</b>	: 65.7 kWh/m <sup>2</sup> /year
<b>Renewable Energy</b>	: Rated capacity of solar PV installed on site is 11.34 kWp
<b>GRIHA Provisional Rating</b>	: 3 Stars
<b>Year of Completion</b>	: 2017

### The following strategies were adopted to reduce the building impact on the natural environment:

#### 🌱 Sustainable Site Planning:

- Excavated fertile top soil was preserved and reused for landscaping on site within the IIT-Bombay campus.
- Out of the 40 existing trees, 2 trees were cut and 15 new trees, native to the region, were planted.
- Openings have been designed in the building to maximize cross ventilation.

#### 🌊 Water management:

- Reduction of more than 68% from the GRIHA base case has been demonstrated in landscape water demand through use of highly efficient drip irrigation system.
- Reduction of 54% from the GRIHA base case has been demonstrated in building water use by installing water efficient flush and flow fixtures.
- Water saving during construction was demonstrated by using wet gunny bags, ponding for curing of structural elements and use of pre-mixed concrete.

#### 💡 Energy Optimization:

- High efficacy lamps are installed for exterior lighting which is operated by timer controller.
- EPI reduction of 34.3% from GRIHA benchmark has been demonstrated.
- 49% of the habitable spaces are day lit and meet the daylight factors prescribed by the National Building Code of India.

#### ☀️ Renewable Energy Technology installed on site:

- 11.34 kWp capacity solar PV panels installed on site cater to more than 1% of internal lighting and space conditioning connected loads.

#### ♻️ Waste Management:

- Multi-colored bins are used in the building for segregation of dry and wet waste.
- Demarcated segregated space has been allocated for collecting waste from the entire building before transferring it to the recycling/disposal stations.

#### 🏠 Sustainable Building Materials:

- Reduction of 84.68% from GRIHA base case has been achieved in the embodied energy of non-structural system.
- Pozzolana Portland Cement (PPC) indicating use of 30% fly-ash content by weight has been used in plaster and masonry mortar.
- Project has used PPC with 42% replacement of cement with fly-ash by weight in the structural concrete.

### Integrated Design Team:

<b>Client</b>	: Indian Institute of Technology - Bombay
<b>Principal Architect</b>	: Kira Kothari, Ratan J Batliboi Consultants Pvt. Ltd.
<b>Green Building Design and Certification</b>	: Sunil Kumar and Manali Saraf, Godrej GBCS