



Coal India Limited Office Building

Location	: Kolkata, West Bengal
Site Area	: 20,235 m ²
Built up Area	: 25,519.25 m ²
Air-conditioned Area	: 13,892 m ²
Non Air- conditioned Area	: 11,627.25 m ²
Energy Consumption Reduction	: 37.9% reductions in energy consumption compared to GRIHA benchmark
EPI	: 86.88 kWh/m ² /year
Renewable Energy	: Rated capacity of solar PV installed on site is 140 kWp
GRIHA provisional rating	: 4 Stars
Year of completion	: 2014

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

📍 Sustainable Site Planning:

- Building designed with due respect to existing contours
- Proper timing of construction ensured to minimize soil erosion.
- Passive design features such as light wells and courtyards have been created to harvest daylight.
- Spaces such as services and toilets are provided along the east west direction, which act as buffer spaces.

📍 Reducing water consumption:

- The project has demonstrated a reduction of water consumption by 78% compared to base case scenario by installing low flow fixtures.
- Project has achieved a 50.17% reduction in the landscape water requirement over GRIHA base case.
- Reduction in water consumption during construction by use of gunny bags for curing columns, and use of premixed plaster that requires less water for curing.

📍 Reducing energy consumption (compared to GRIHA benchmarks) while maintaining occupant comfort:

- For achieving visual comfort:
 - » 82% of total living area is day-lit and meets daylight factor as prescribed by National Building Code.
 - » ECBC compliant energy efficient artificial lighting design.
 - » External Shading & Efficient glazing to reduce solar heat gain and have glare free daylight.
 - » Integration of daylight sensors with artificial lighting to create visual comfort to the building occupants and returns a good amount of energy savings.
- For achieving thermal comfort:
 - » Use of fly ash brick in envelope to reduce cooling load in AC spaces
 - » Water cooled chiller as per system efficiency as per recommended in ECBC

📍 Renewable energy technologies installed on site:

- 140kWp solar panel has been installed to cater building energy requirement.
- All external lights works on solar energy.
- BIPV and PV panels are integrated with the building design and are appropriately positioned.

📍 Use of low energy materials:

- Use of coffered slab.
- Flyash bricks and Autoclaved Aerated Concrete (AAC) blocks have been used in the project to reduce embodied energy of the building.
- PPC is used for structural application and plaster masonry.
- 85% of the total interior flooring is done with low-energy materials (Granite stone, , sandstone, vitrified tiles and hardonite tiles with recycled content).

Integrated Design Team:

Client	: Coal India Limited
Project Coordinator	: NBCC Limited
Principal Architect	: Raj Rewal Associates Architects & Urban Design Consultants
Landscape Architect	: Raj Rewal & Associates
Project Management Consultant	: NBCC Limited
Structural Consultant	: Acme Consultants
Electrical Consultant	: Acme Consultants Pvt Ltd
Green Building Design and Certification	: Ela Green Building & Infrastructure Consultants

Kolkata