Civil Services Officers' Institute (CSOI) Club Building

Location	: Chanakyapuri, New Delhi
Site area	: 168,234 m^2
Built-up area	: 11,584.6 m^2 (including basement) Total built up area without basement: 5,655 m^2
Air-conditioned area	: 4,664 m^2
Energy consumption reduction	: 36% reduction in energy consumption compared to GRIHA benchmark
EPI	: 247 KWh/ m^2/year
Solar hot water system	: 3,000 lpd
Renewable Energy	: Rated capacity of solar PV installed on site is 6.5 KWp
GRIHA provisional rating	: 3 stars
Year of completion	: 2012

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

Sustainable site planning:
- Top soil conservation
- Preservation of mature trees on site and minimizing cutting of trees; soil erosion and sedimentation control measures
- Buffer spaces on east–west orientation; large deciduous trees on west
- Courtyard planning
- Shading of paved areas to reduce the urban heat island effect

Reducing water consumption:
- Sensor-based urinals and low flow faucets and fixtures have been installed to reduce building water use.
- Native species of trees have been planted to reduce irrigation water requirement.
- In order to further reduce the load on municipal infrastructure, sewage water generated from site is being treated by Fluidized Aerated Bed (FAB) system and is being reused for flushing, HVAC and landscaping application

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

o For achieving visual comfort:
- Fenestration has been designed to achieve maximum glare free daylight in the regularly occupied spaces.
- Artificial lighting has been optimized to achieve NBC recommended lux levels and ECBC recommended lighting power densities

o For achieving thermal comfort:
- Wall insulation and AAC blocks have been used to reduce heat gain.
- Use of high-performance glass in all fenestrations to reduce heat penetration
- A chiller plant has been optimized by providing all AHU fan motors with variable frequency drives. Secondary chilled water pump motor is also installed with variable frequency drive.
- Selection of water cooled chiller of high efficiency
- Transformer losses have been reduced.
- Power factor of 0.95 and above is maintained.
- All motors are Eff1 compliant.

Renewable energy technologies installed on site:
- Use of solar hot water system of 3,000 lpd capacity.
- Use of solar PV system of 6.5 KWp capacity.

Use of low energy materials:
- Materials with recycled content such as use of flyash have been used in building blocks and mortar.
- In-built storage spaces and natural stone for flooring have been provided.

Integrated Design Team:

Client	:	Civil Services Officers' Institute
Principal Architect	:	Architect Hafeez Contractor
Local Architect and MEP	:	Thareja Designers and Architecture Pvt. Ltd
Project Management Consultant	:	National Buildings Construction Corporation Ltd (NBCC)
Green Building Design and Certification	:	The Energy and Resources Institute