New Administrative Building for Indian Railways Institute of Civil Engineering (IRICEN) , PUNE

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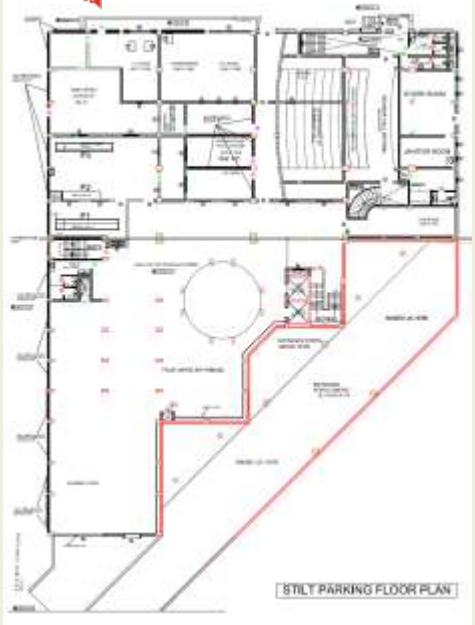
Background

- Indian Railways Institute of Civil Engineering (IRICEN) was located adjacent to Pune Railway Station for last 60 yrs.
- The accommodation of faculty and trainee Officers is at Koregaon Park about 3 Kms from Pune Railway station.
- Too much time & energy was wasted in addition to huge man hour loss in commuting .
- To overcome this problem, the New Administrative Building has been constructed near the existing Hostel at Koregaon Park.
- As IRICEN is Premier Institute imparting training to all Civil Engineers of Indian Railways, the building was planned as Green Building to impress upon all the trainee officers the importance of Green Environment.

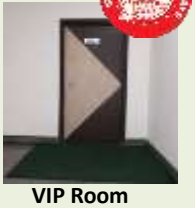
Salient Features

- Location: Koregaon Park, Pune
- Site Area: 7547 sqm
- Built Up Area: 7912 sqm
- Air Conditioned Area: 3137 sqm
- Non Air Conditioned area: 4775 sqm
- EPI(Energy Performance): 8.76 kWh/sqm/year
- Renewable Energy: 30 kW solar PV & 10 kW BIPV
- **Energy Consumption: 93.74%reduction from GRIHA bench mark of 140kWh/sqm/year**
- Water consumption: Reduction of 77.58% as per GRIHA benchmark
- **Green Building LEED India platinum-First Platinum** rated building on Indian Railways
- **Awarded Innovative institutional building of 2013 award and trophy by Indian Building Congress**

FACILITIES ON STILT FLOOR




Auditorium(220Seats)


VIP Room

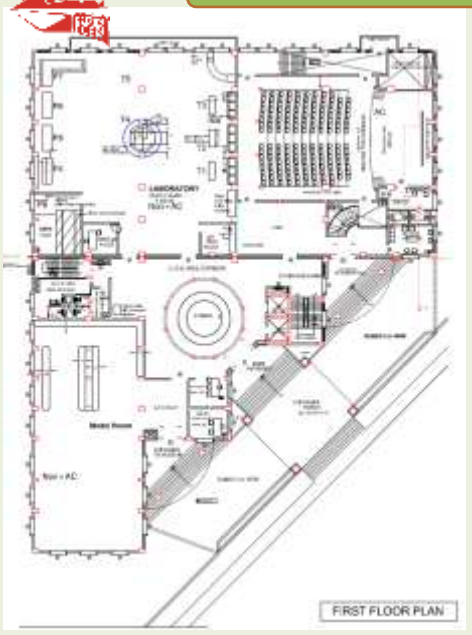

Sub Station


Solar Panel Room


Parking (10 four wheeler & 50 Two wheeler)


Heavy Laboratory

FACILITIES ON 1st FLOOR



Reception

Laboratory

Museum

FACILITIES ON 2nd FLOOR

Library

Reading Room

Offices

6

FACILITIES ON 3rd FLOOR


Conference Hall


Class Rooms



Class rooms


Tea Lounge


Computer Centre

FACILITIES ON 4th FLOOR


Director's Chamber


Cut Out on 3-4 Floor



Committee Hall



Faculty Chambers

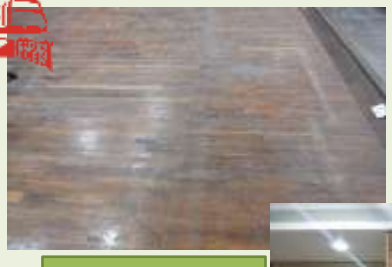
GREEN DESIGN FEATURES

Passive Architectural Design strategies

- Internal space planning to minimize heat gain in more than 75% of regularly occupied space on each floor
- Provision of shaded skylight helping in stack ventilation in common areas

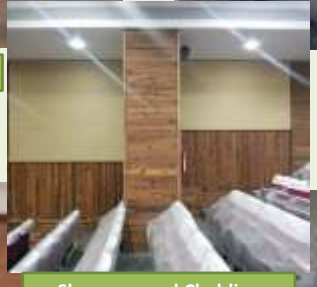
Reduction in Water Consumption

- Use of low flow fixtures
- 20 KLD capacity sewage treatment plant treats 100% grey water generated from this building **as well as from adjacent hostel** to tertiary level and this treated water is used for irrigation of landscape bringing down the fresh water requirement for landscape to NIL.
- Efficient irrigation system with drip irrigation and sprinklers

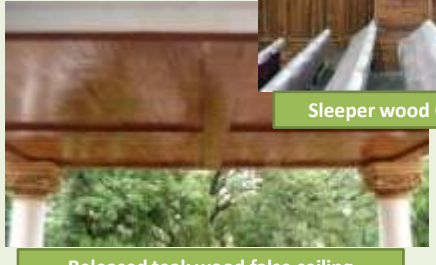


Maple wood Flooring

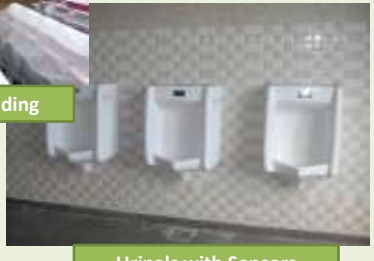
Taps with Sensor



Sleeper wood Cladding



Released teak wood false ceiling



Urinals with Sensors

GREEN DESIGN FEATURES CONTD..

Sustainable site planning:

- Site developed in a developed urban locality maximizing closeness to basic amenities
- Existing trees preserved at site and additional native trees are planted
- Top soil preserved and reused in landscape
- Reduced hard paving on site and well shaded paved surface reducing heat island effect

Reduction in Energy Consumption (Compared to GRIHA Bench mark) while maintaining occupant comfort:

- Insulation to walls on south & west side (double wall of fly ash bricks with 25mm insulation filler in cavity). Terrace insulation by providing 40mm EPS board and high SRI value (>90%) tiles on terrace floor
- Double glazed windows on south, west & east side of buildings with high performance glass.
- 2 skylights provided to use maximum daylight minimizing use of artificial lighting.
- Most Efficient LED lighting fixtures(in AC areas) and T5 tube lights (in non AC areas) with Occupancy and Daylight Sensors
- Most Efficient VRV AC Units with average COP upto 4.2

Top Soil Preservation

Dust Control

Pervious Pathway

Barricading

Transplantation

Over Deck Insulation

Atrium

VRV AC

BIPV on Skylight

Polycarbonate dome

PV cells

GREEN DESIGN FEATURES CONTD..

Indoor Environment Quality:

•More than 50% of occupied space achieves Day light levels as per GRIHA

•Declaring entire campus as “No Smoking Zone”.

•CO2 monitoring in all densely populated spaces such as Auditorium & classrooms.

•Use of Low VOC Adhesives, Sealants, Paints.

•No added urea-Formaldehyde resins in all composite wood and agri fibre products used in the building.

•Natural ventilation in 100% of area and 30% enhanced ventilation per ASHRAE Standards

•Sound levels as per NBC 2005

CONCLUSION

The new Administrative building of IRICEN was planned as Green Buildings to reduce the energy demand and optimize the use of other resources as well as to dissipate knowledge and awareness regarding environment protection to all Civil Engineers on Indian Railway. The project has achieved its goal as Railway officers from all over India are visiting IRICEN and inspired by its success planning more and more green buildings. **The best part of this building is that it is part of curriculum of trainee officers at IRICEN which has helped them in propagating the green concept throughout the country**. New Administrative Building for IRICEN at Koregaon Park, Pune is one step taken by Indian Railways in the direction of greener Environment of future.

AGENCIES ASSOCIATED

Contacting agencies and their works:

- M/s KCPL, Miraj (Civil Construction)
- Shri Ravi Jante, Latur (Balance Works Civil Construction)
- Shree Electricals, Pune (HVAC)
- Omega Enterprises, Ahmedabad (Lift)
- Shalakha Infraprojects Ltd., Pune (Sub-station, DG)
- Data Com, Mumbai (Communication, PA system, networking

Consultants :

- CII Godrej, Hyderabad : Feasibility Study for LEED Certification.
- M/s Shashi Prabhu & Associates, Mumbai : Architectural & Structural Consultant
- M/s Conserve, Chennai : Energy Simulator
- M/s Inertia, Hyderabad : LEED Facilitator and GRIHA consultant
- Sir J.J.School of Arts, Mumbai – Bust of Sir M Visvesaryya, Monogram of IRICEN & Other beautification works.
- **Sub Consultants :**
- M/s V.N. Purandare & Associates, Pune : Auditorium & Acoustics
- M/s NECON Engineers, Pune : General Electrical
- M/s REFRISYNTH Engineers, Pune : HVAC
- Green One, Pune : Landscape
- SGS India Pvt. Ltd., Gurgaon : Building Commissioning Agent








Thank You!