# Rail Nirman Nilayam

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|---|---|
| **Location** | : Secunderabad, Andhra Pradesh |
| **Site area** | : 7800 $m^2$ |
| **Built-up area** | : 4405 $m^2$ |
| **Air-conditioned area** | : 3234.9 $m^2$ |
| **Non-Air-conditioned area** | : 1175.8 $m^2$ |
| **Energy consumption reduction** | : 36.5% reduction in energy consumption as compared to GRIHA benchmark |
| **EPI** | : 71.1 KWh/$m^2$/year |
| **Renewable energy installed on site** | : Rated capacity of solar PV installed on site is 38.63 KW |
| **GRIHA final rating** | : 3 Stars |
| **Year of completion** | : 2011–12 |

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

**Sustainable site planning:**

- Existing trees preserved and protected.
- Building designed with due respect to existing contours — minimum cutting and filling of soil.
- Proper timing of construction ensured to minimize soil erosion and pollution.

**Reducing water consumption:**

- 50 % reduction in building water consumption by use of low flow fixtures.
- Reduction in water consumption during construction.

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

- For achieving visual comfort
  - External shading and efficient glazing to reduce solar heat gain and have glare-free daylight.
  - ECBC compliant energy-efficient artificial lighting design.
  - Multi sensors compatible to DALI-based dimming of light system.
- For achieving thermal comfort
  - ECBC compliant building envelop to reduce cooling loads in AC spaces. Thermal comfort levels in non-AC spaces achieved.
  - Centralized air conditioning through variable refrigerant flow technology. Facility of controlling each indoor unit centrally as well as individually, based on occupancy censor.

Building performance as per audit report:

**Energy**

- Energy generated through solar PV- 50,374.1 KWh/year.
- Final EPI achieved - 34.12 KWh/$m^2$/year.
- Actual reduction in EPI from base case - 60%(24% more than predicted.)
- Thermal comfort is met as per NBC 2005.
- Lighting lux levels are met as recommended by NBC 2005.

**Water and waste water**

- Water test report indicates conformity to IS code 10500.
- Water consumption in building - 25,31,000 lt/annum.
- Total quantity of waste generated - Approx 12 Kg/day.

**Noise level**

- Outdoor noise levels are within acceptable limits as per CPCB.
- Indoor noise levels are within acceptable limits as per NBC 2005.

**Renewable energy technologies installed on site:**

- Installed capacity of solar energy to meet space conditioning and internal lighting loads: 38.63 KW.
- Installed 12 nos LED solar street light with 360 W loads.

**Use of low-energy/green materials:**

- Fly ash blocks used in block work for better insulation.

**Integrated Design Team:**

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| **Project Coordinator** | : | Deputy Chief, Engineer/con-I/S C |
| **Principal Architect** | : | Designer Group, Hyderabad |
| **Landscape Architect** | : | Sri MVVSatyanarayana, Hyderabad |
| **Project Management Consultant** | : | Unit of Dy.CE/C-I/SC |
| **Civil Contractors** | : | Sri. MVVSatyanarayana |
| **Structural Consultant** | : | Sri Putrayya, Aadhaarshila |
| **Electrical Consultant** | : | M/S Watson, Hyderabad |
| **Green Building Design and Certification** | : | Sri Gunjan Srivastava, M/S Inertia, Hyderabad |