"LEARN, LIVE, WORK, RELAX AND BE GREEN"

Anna centenary library building is constructed as a state of art library building by Department of public libraries, Tamil Nadu State Government. The building is located in a well developed area in Kotturpuram, Chennai amidst Educational/ Institutional surroundings and easy access from all parts of the city. The building has been developed in 8 acres land with world class facilities with approximate built up area of 3.8 lakhs sft. The vision "is to be an internationally recognized urban Library known for excellence in learning, innovative research, and community engagement that contributes to the economic vitality, environmental sustainability, and quality of life in the Chennai region and beyond". This demonstrates the commitments of the Tamil Nadu state government towards protecting the environment for future generation.

The library building complex consists of Library building (G+8) and an auditorium (G+1) to accommodate 1200 persons. To improve the thermal comfort of the occupants, the building has been provided with adequate air conditioning.

The project achieved the prestigious LEED Gold rating given by Indian Green Building Council under New Construction rating. This is a unique achievement for the Tamil Nadu State Government and happens to be the first library building in the Asian region to get this coveted rating.

Chennai's Green Library

Asia's First Leed Gold Rated Library Building Situated in Chennai

Green Building Features of Anna Centenary Library Building:

We are learning, sometimes the hard way, that battling nature is an expensive and ultimately futile effort. Nature is a complex set of systems, each with its own integrity and life cycle. Respecting these natural systems and creating structures and communities in concert with them is the foundation of "sustainable development".

Incorporating "green" element successfully and cost effectively into any project is an "art" that requires a multi-disciplinary, integrated approach as well as a long-term view of "value". It also requires at least one powerful stakeholder who makes "going green" a requirement of the project.

Some of the green element incorporated at Anna Centenary Library:

Sustainable sites:

- The top 20 cm soil during excavation is protected and used for landscape applications.
- Project is located in a well developed area and has access to all the basic amenities, which channels development to urban areas with existing infrastructure.
- Project has two nearby bus stops, which encourages the use of Mass transportation system.
- The project is provided with 341 numbers of car parking spaces, in which 18 car spaces have been earmarked for car/ van pool spaces.
- 11 number of 15 amp sockets has provided in the parking lot to encourage the use of electric vehicles.
- Extensive landscape is provided to an area of 6361 Sq.m. to address the heat island effect.
- Adequate rain water harvesting structures (rain water sump and percolation pits) of capacity 780 m3 is provided, which ensures the good rain water harvesting and increase in ground water table.
- A collection well/ sand filter is provided at the lowest point of the site, which helps to remove the sediments from storm runoff moving out of the site.
- To reduce the heat ingress in to the building, the library terrace area is painted with high albedo paints and green roof is provided to Auditorium terrace and Library terrace level at 1st, 2nd and 3rd floor.
- Efficient lighting system is designed to ensure there is no light pollution from the project.

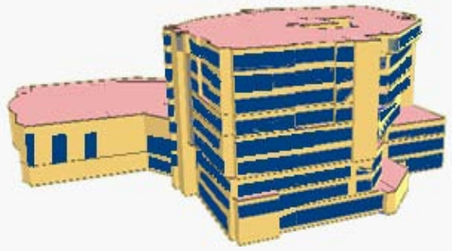
Water efficiency:

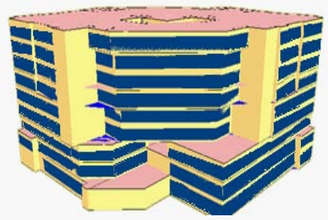
- The project is provided with onsite sewage treatment plant of capacity 75 KLD to treat the wastewater produced from the building.
- Only treated waste water is used for Landscape irrigation and toilet flushing requirements
- High efficient Landscape irrigation systems – Drip and Sprinkler system
- To reduce the potable water consumption, the building uses only water efficient fixtures and achieved water use reduction of 64 % compared to a standard building and the flow rates are as follows,
  - Water Closet – 1.6 GPF
  - Urinals – 0.4 GPF
  - Wash Basin – 1.7 GPM
  - Sink – 1.7 GPM
  - Shower head – 1.7 GPM
  - Health faucet – 0.026 GPM

GPF – Gallons Per Flush, GPM - Gallons Per Minute

Energy efficiency:

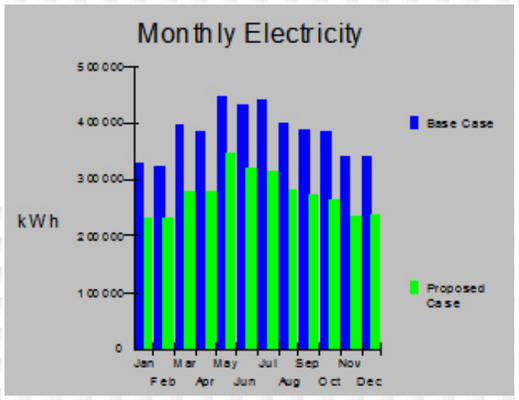
- The project uses high efficient air cooled chillers with COP of 3.11.
- Energy saving heat recovery wheels and Demand control ventilation are provided.
- 75 mm thick over deck roof insulation of extruded polystyrene.
- Achieved a very low lighting power density of 0.71 W/ Sq.ft against 1.3 W/Sq.ft.
- Day light controls for perimeter areas are provided.
- Glazing (DGU) with low Solar Heat Gain Coefficient of 0.2.
- High efficient motors, pumps and fans.
- Project achieved 17.5 % of energy use reduction compared to a standard building.
- CFC and HCFC free HVAC and Fire suppression system.
- Energy and water meters are provided at strategic locations to quantify the energy and water usage.





Electrical Use Summary

Alternative	Lights	Equipment	Cooling	Tower/Heat Reject.	Pumps/Aux.	Fans	Total
Electrical End-use Totals (kWh)							
Base Case	2,243,820	132,491	1,401,766	471,594	45,991	315,098	4,610,760
Proposed Case	1,141,850	132,491	1,801,046	0	26,631	201,021	3,303,039
Incremental Electrical Savings (kWh)	(compared with previous alternative, negative savings represent increases)						
Proposed Case	1,101,970	0	-399,280	471,594	19,360	114,077	1,307,721



This building would consume 30% less energy and 20% less potable water consumption without affecting the indoor condition and occupants comfort. In a nut shell, the additional investment made to obtain the Gold rating would get paid back in just 2.5 years period through operational energy efficiency. This demonstrates green makes economic sense.

Materials:

- To segregate the waste generated in the building six numbers of waste bins are provided in the each floor level and a common collection yard at ground level with a collection area of 525 Sq.ft.
- 75 % of the construction wastes generated are reused within the site and sent for recycling.
- The project used building materials with recycled content value of 12 % by cost of the total material cost.
- To support the regional economy and to reduce the environmental impacts resulting from transportation, the project used 77 % of the building materials manufactured and extracted locally, i.e. within 500 Mile radius.

Indoor Environment Quality:

- For improved occupant comfort and well being the project is provided with, increased fresh air of 30% more than the ASHRAE requirements.
- Smoking prohibited Environment.
- Only low VOC products (Paints, Adhesives and sealants), CRI certified carpet and MDF & plywood free from urea formaldehyde resins are used in the building.
- Only eco friendly house keeping chemicals are allowed inside the building premises.
- Chemical rooms inside the building are provided with deck to deck partitions and negative differential pressure of 5 pas is maintained.
- DCV system and CO2 sensors are provided in densely occupied areas (more than 25 persons in 1000 Sq.ft.)
- 15 days building flush out is carried out prior occupancy. MERV 8 filters were used during flush out and MERV 13 filters after flush out.
- All the equipments and systems are protected from dust and moisture during construction.
- Entry way mats are provided with minimum 6 feet long in all the main entrances.

Project Team Involved

LEAD Consultancy & Engineering Services (India) Private Limited (LCES) has been started by a team of qualified professionals with vast experience and expertise in the areas of Energy Efficiency & Green Building Rating Systems.

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