

Green Library: An overview

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Abstract:-

A Green Library also known as a sustainable library, is a library built with environmental concerns in mind, Green libraries are a part of the larger green building movement. Green libraries are being built all over the world, along with library 2.0 green design is an emerging trend, defining the library of the 21st century. A study of Green libraries in 2008 revealed that not only has energy conservation become important, but that spaces designed for users rather than books have become paramount the Modular system worked particularly well for housing ever-expanding books collections but collecting growth is no longer practical goal. Users want and need a greater variety of spaces, which purpose built rooms are better at meeting.

Definition:-

The online Dictionary of Library and Information Science defines Green Libraries as: A Library designed to minimize negative impact on the natural environment and maximize indoor environment quality by means of careful site selection, use of natural construction materials and biodegradable products, conservation of resources (water, energy, paper, responsible waste, disposal, Recycling etc). In new constructing and library Renovation, sustainability is increasingly achieved through LEED (leadership in energy and environment Design) certification a Rating system developed and administered by the U.S. Green building council (USGBC).

What is a green Building:-

In the United States the non-profit organization the United States Green Building Council (USGBC) developed the Leadership in Energy and Environmental Design (LEED) rating system in the year 2000. Their point based rating has a total of 100 base points possible and building can

be categorized as certified (40 points) silver (50), gold (60) or Platinum (80+) LEED uses five different categories to Judge a building sustainability.

1. Site location
2. Water conservation
3. Energy efficiency
4. Materials
5. Indoor air quality and bonus category for innovation and design.

1. Site location:-

Before building can start, a site must be chosen. The selection of the site has a larger impact on how ecologically friendly the library will be. The library should be located in a densely populated area, near a number of other services related buildings. People should be able to reach the building by public transportation and the parking lots should give priority parking to those driving energy efficient vehicle.

2. Water conservation:-

There are many different ways for libraries to conserve water. A number of them rely on proper site selection. If a site is selected properly strategies can be used to capture rainwater runoff be used in irrigating. Another strategy is to use low flow fixtures and waterless urinals.

3. Energy efficiency:-

Energy efficiency is considered by many to be the most important category in becoming sustainable. In the LEED rating system it is the heaviest weighted of all the categories. Energy efficient design is in many ways a return to passive design principles that evolved over thousands of years, until the advent of air conditioning and cheap energy made those strategies appear to be unnecessary.

As environmental awareness increases, as well as the cost of fossil fuels needed to operate giant heating, air conditioning, and ventilation ([HVAC]) systems, building designers are beginning to recognize that the outside environment cannot be ignored, and should be taken advantage of.

What 21st-century designers are beginning to do is implement ancient passive design principles, while taking advantage of the most advanced technology available.

4. **Building Materials:-**

It is believed that up to 40% of landfill space is filled with construction waste material.^[1] The primary responsibility in selecting materials for the library is to contribute as little waste as possible. Another responsibility is to choose materials that can be produced without causing too much damage to the natural environment. In order to fulfill the first responsibility, post-industrial and post-consumer recycled materials are being used. When purchasing materials claiming to be made from recycled goods it is important to investigate what their claims mean. It is a common marketing practice to exaggerate how green a product is by using misleading statements.^[1] Also, materials should be chosen that are going to be able to be reused or recycled 50–100 years down the road when the library building has reached the end of its useful life. As non-renewable resources decrease, reusing and recycling are going to become increasingly necessary in the future.

5. **Indoor air quality:-**

Along with energy inefficiency poor air quality has been another side design, because most modern buildings are temperature controlled, they are designed to be airtight. The lack of ventilation can not only make building expensive to cool, it also traps harmful toxins that can do serious damage to peoples respiratory systems on average people spend about 90% of their time indoors, therefore green building need to be designed in a way in which the air gets recycled and does not stay stagnant . A green library is not just taking care of the environment, it is about taking care of the health and well being of those who work in it and patronized it.

Green design elements for libraries:-

The main goal of green building is to develop and use sustainable energy efficient resources in construction, maintenance and overall life of the structure. Libraries considering green design will often look at the leadership in energy and environment desing (LEED) rating system. Brown identified the following green desing elements, which can be incorporated into libraries.

1. Community collaborating- makes sure that community assets are efficiently used and helps to maintain public support.
2. Daylight- pair daylight with artificial lighting and reduce energy costs.
3. Green materials- use renewable materials like wood, bamboo.
4. Green roofs
5. Raised floor systems
6. Energy efficiency
7. Natural Ventilation
8. Green power and renewable energy
9. Indoor environment quality.

Green libraries in India:-

Anna centenary library located in Kotturpuram is the largest library in Asia and one of the most sustainable. The cavernous space can accommodate well over a thousand readers at a time and 1.5 million books. The design by C.R. Narayana Rao makes the most of the outdoor light with lots of windows to the north-east, skylight and an outdoor amphitheater on the roof. Inside LED lights illuminate a huge indoor auditorium, cafeteria and many reading and research area.

The library was built from the ground up with conservation in mind. Special care was taken to select sustainable materials more than 60% are locally sourced and recyclable. Natural lighting is key player in the design, as are large windows facing the north and east to provide the best light without introducing heat. The south utilizes shading and vegetation to create heat buffer zones. Waste water is reused on the grounds and naturally educational materials is placed throughout the space to raise awareness of how the building works.

Conclusion:-

Green libraries are related to the overall green building movement, libraries have specific needs that raise some extra challenges for their preservation books must be kept away from sunlight as well as moisture and temperature change. Sunlight plays major role in green design, because it can be used to reduce the reliance on artificial lighting. Another challenge the library presents the weight of the books. A common strategy in green is to raise the floors to increase

circulation, but the weight of the stacks can be an impediment to this strategy. To deal with this challenge, many designer have resorted to zooming the library into designated area.

Libraries need to be built flexibly, in order to make room for expansions in size and in wiring capabilities. Library building are long term investments made to benefit the community so when designing them architects need to be looking so or 100 years into the future.

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