



International Conference – Alternative and Renewable Energy Quest, AREQ 2017, 1-3 February
2017, Spain

Building a Green Home Using Local Resources and Sustainable Technology in Jammu Region – A Case Study

“Abhiney Gupta”

** Asst. Prof., Department of Architecture & Landscape Design, Shri Mata Vaishno Devi University, Kakryal, Katra, J&K, 182320, India.*

Abstract

Constructing a green building is an important step towards building an environment free of negative impact by conserving and reducing usage of natural non-renewable resources. India's Green Building Council [IGBC] highlights the fact that more than two billion sq. ft. of registered green building footprint exist in India [1].

Metros are working towards popularizing the green building movement and registering buildings for green certification. Whereas, in small towns and cities across India such concept is still in its natal stage. With the ever increasing population and urbanization, the requirement of affordable sustainable houses is need of the hour.

This research article aims at developing a green residence in Jammu city, where the concept of sustainability is new. The research focuses on local resources available and utilizing natural resources efficiently; establishing green roofs, planting trees to control the overall temperature and provide better air quality; and making an effort towards conserving resources and reducing the carbon foot print.

© 2017 The Authors. Published by Elsevier B.V.

Peer-review under responsibility of the organizing committee of AREQ 2017.

Keywords: Green buildings; Sustainable Architecture; Water and Energy Conservation.

1. Introduction

Making buildings green is need of the hour as it is a step towards the most effective optimal utilization of land, energy and water while assuring a least disruptive use of natural resources in the process of creating a healthy environment. It promotes conservation of perishable non-renewable resources and also the cost and the environmental issues

* Corresponding Author Tel no.: +91-9419134708
E-mail address: abhiney.gupta@smvdu.ac.in

associated with the processing and transport of these materials. A huge rise in the construction of green non-residential buildings is observed. The most popular amongst them being office of the federal environmental executive [2], Environmental Protection Agency (EPA) [3], U.S department of energy, [4], University Tower at The New School in New York's Greenwich Village [5] etc. across the globe. However, it has been observed that the concept of green architecture is still not so common among the masses due to lack of exposure and primarily because of human tendency to follow rat race and go for fashionable lifestyle. Another major obstruction towards creating green buildings especially homes is the layout and planning of cities and towns particularly in Indian scenario which does not cater for the basic necessities like employing rain water harvesting techniques for the town, proper sewerage plants etc. Live example that depicts total failure of even posh towns in metros becomes quite evident during monsoons when we find water clogging everywhere leading to total chaos on roads resulting in huge traffic problem. Cities like Mumbai, Delhi which in a way are far advanced and ahead in terms of planning, designing and research fall prey to this menace. The problem is further aggravated by the pigeon-hole size cutouts for plots which are done by municipality keeping in mind only the revenue generation aspect and not considering the sun movement, the flow of air direction, proper plantation of towns etc. which are crucial in building green homes. The concept of green buildings to create healthy and natural environment is further nullified as long as the residential houses are not designed keeping in mind the green architecture as they constitute a huge percentage of built environment. If in future, architects and engineers work together in framing municipal bye-laws with the prime focus towards developing green residences; we can expect a huge conscious deliberation towards a healthy environment and human life.

This research article aims at developing a green residential house in Jammu region of J&K, India, using indigenous materials readily available. Jammu is located at 32.73°N 74.87°E at an altitude of 327 m (1,073 feet) [16]. The city experiences sub-tropical climate with heavy monsoons from June to September. The temperature varies from 2⁰ C. to 46⁰ C. during extreme winters and summers respectively.



(a) Map of India [16]



(b) Map of Jammu and Kashmir [16]



(c) Terrain of Jammu and Kashmir [16]

Figure 1(a) to (c): Maps depicting Jammu district in the state of Jammu and Kashmir, India.

The research focuses on utilizing water, solar and other forms of resources efficiently; establishing green roofs and planting trees to control the overall temperature of the house; enhancing indoor air quality using skylights, well-connected corridors along with lawns and courtyards and above all an effort towards reducing the carbon foot print.

The paper is structured as follows: In section II we discuss the exiting green buildings / houses existing in India. Section III proposes the various concepts incorporated in designing a greenhouse for Jammu region using readily available energy-efficient and eco-friendly materials. It further discusses the technicality, issues and the drawings in conceptualizing this model. Section IV provides the conclusion.

2. Related Work

The concept of green buildings in early times was mainly with the perspective of designing commercial complexes;

Download English Version:

<https://daneshyari.com/en/article/5445369>

Download Persian Version:

<https://daneshyari.com/article/5445369>

[Daneshyari.com](https://daneshyari.com)