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ARCHITECTURE UPDATE

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 3rd Anniversary

*“My Best
Green
Project”*

Ar Christopher Benninger's Suzlon One Earth

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3rd Anniversary

"My Best Green Project"



A KNOWLEDGE CENTRE FOR PATNI INSPIRED BY **TRADITIONAL HAVELI** **ARCHITECTURE**

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Ashish Rakheja, COO, Spectral Services Consultants Pvt Ltd, and **Ar Sheetal Rakheja**, Partner, Design & Development, elaborate on the *haveli*-inspired project - Patni Knowledge Centre, Noida





"My Best Green Project"



THE STRUCTURE

Covering a built-up expanse of 4,60,000 sq ft, the Patni campus, situated in suburban sprawl of Noida, is the second-largest Platinum-rated LEED-certified green building by the Indian Green Building Council (IGBC).

INSPIRED BY HAVELI DESIGN

An attempt towards sustainable development, the design of the edifice is inspired by the traditional inward looking Indian *haveli*. The basic design concept is that of simple straight line, low-key architecture in context with the surroundings, site and climate. Passive (architectural) and active (mechanical / electrical) strategies have been optimally designed to minimise energy consumption.

The building is designed around two beautifully landscaped courtyards with water bodies, plants and sculptures as visual nodes, which enhance and bind the space. The building's facade opens out for greater transparency towards the courtyard.



The building depth has been optimised to capture daylight for more than 75 percent of the occupied interiors

THE ELEVATION

The elevation of the edifice has been inspired by a typical Indian *haveli jharokha*. The building depth has been optimised to capture daylight for more than 75 percent of the occupied interiors and in order to maximise the outdoor views. The exterior shading systems of the building have been designed to cut off heat while being receptive towards glare-free light.

NATURAL COOLING

The aesthetic water features in the courtyards also act as natural cooling bodies that help in lowering the ambient temperature of the



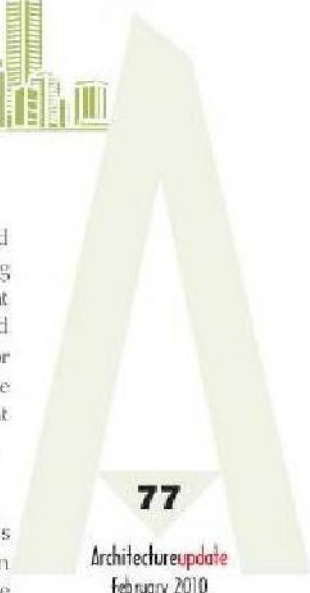
The building is designed around two beautifully landscaped courtyards

development. The courtyard, hence, acts as a light well, a microclimatic generator and a landscape element.

The building simulation results found that the active and passive features of the Patni campus, together help in saving approximately 35 percent energy over ASHRAE-based buildings.

ZERO-DISCHARGE DEVELOPMENT

Maximisation of landscaped areas and a substantial reduction in the heat island effect has been ensured by



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SNAPSHOT

Project	Patni Knowledge Centre
Location	Noida
Built-up Area	4,60,000 sq ft
Architects	Design & Development Ar Sheetal Rakheja
Consultants	Spectral Services
Green Benchmark	LEED Platinum



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incorporating peripheral vehicular movement, locating the entry-exit ramps in closest proximity to the site's frontage and keeping 100 percent parking in the basement of the development. More than 50 percent of the ground area has been kept green to increase the porosity of the site. The Patni campus is a zero-discharge development - the entire rainwater is collected and taken to the harvesting tanks.

The sewage is 100 percent treated and the recycled water is used for the purpose of cooling the tower makeup, gardening and flushing. Solar water heating, drip irrigation and native and low water-consuming plants

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The design minimises energy consumption

have been used for the purpose of efficient water management strategies.

The Patni project is a quantum leap in comparison to the conventional procedures, which accomplish lesser criterion. This project sets up stringent standards for its contemporaries to follow and provides them with a direction to further improve on those standards. A strong monitoring process will be put into place to lower the energy consumption of the development every subsequent year. ▲

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More than 50 percent of the ground area has been kept green



The project sets up stringent standards for its contemporaries



The basic design concept is that of simple straight line, low-key architecture



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A HOLISTIC DESIGN FOR GREEN BOULEVARD, NOIDA

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Ar Vidur Bhardwaj, Principal Architect, Design & Development, New Delhi, writes on the sustainability aspects of his much-acclaimed Green Boulevard project in Noida





HOLISTIC DESIGN

Green Boulevard, developed by leading green developers, The 3C Company, is based on a holistic design principle, outlined to be a green structure.

The project was built keeping in mind the notion that buildings should consume less as in the current scenario conventional buildings consume far more energy than any other sector of our economy.

It is estimated as per the building simulation results that the active and passive features of the Green Boulevard, together help in saving 40 percent energy from other standard office buildings in the country.

The project is the world's largest LEED Platinum-rated building in Shell and Core

category by the US Green Building Council. The 3C Company was determined to develop a building which is energy-efficient, propagates costs savings, reduces impact on the environment, and improves living and working conditions.

THE LOCATION

The project has a built-up area of one million sq ft (approximately) and is located in Sector 62, Noida. It is home to multinational corporations such as Accenture, Sapient, Universal Crescent Tower and Nokia-Siemens.

TIMELESS COURTYARDS

Courtyard is a timeless spatial element of Indian architecture; it continues to be as valid today as before. It contributes to spatial quality beautifully by bringing in subdued light and creating serene environment. Courtyard hence performs multifunctions - being a light well, a microclimatic generator and a landscape element and a social space. This concept has been taken care of in the project.

NATURAL LIGHT

Series of landscape-sunken courts allow diffused natural light into lower ground area housing cafeteria, gym and offices. The lower ground areas remain cooler as these are sunk & surrounded by plants on all sides. The nature's walk is created across the campus amalgamating ground and lower ground with the intent of making people walk every day through this landscape before entering their workplace. This would make the occupants feel close to nature and inculcate appreciation and sensitivity towards the environment. Paintings and sculptures (made out of waste) are part of this landscape with the intent of creating awareness on global warming.

THE FACILITIES

With facilities such as an amphitheatre, gym, cafeteria and shops, all the three towers are designed around shaded landscaped courts with shallow water bodies & plants, which are placed strategically along the wind



The ground floor plan



"My Best Green Project"



direction to help cool the ambient temperature of the campus. These are staggered horizontally and vertically, giving each one visibility from the road as well as ensuring harnessing of daylight without shadowing each other.

THE PARKING AREA

More than 85 percent parking is kept in the basement, with the entry-exit ramps in closest proximity to the site's frontage (vehicular traffic limited to the periphery thus maximising green areas). This maximises landscape areas, reduces heat island effect and increases on-site rainwater infiltration. More than 40 percent of the open areas have been landscaped with native plants.

EFFICIENT DESIGNING

The building depth has been optimised to capture natural daylight and maximise views. Computer-simulated building model was created and sun path analysis was done to design building fenestration and sun-shading devices to get in glare-free natural light and reduce heat ingress into the building. All the exterior shading systems are designed to get in glare-free light. Pre-cooled fresh air, the heat recovery wheel and free cooling during fair weather further help in energy conservation.

The longer facades of the three buildings have natural north-south orientation ensuring diffused natural light from the north while the clever horizontal projections cut off the high sun from the south side.

USE OF ECO-FRIENDLY MATERIAL

The wall composition followed is a combination of 9" thick brick wall + 50 mm air gap + 25 mm extruded polystyrene + 4" AAC block.

The window to wall ratio has been kept as only 21.60 percent. Double insulated high performance glass has been employed to balance daylight and views. U-value of the selected glass composition is .28 Btu/hr sq ft F which is far superior to conventional practice of using single glazing with thermal conductivity of 1.13 Btu/hr sq ft F.

A layer of 75 mm thick extrude polystyrene insulation laid over - deck in combination with finished white cement flooring help in minimising the heat gain through roof.

Lighting power density is limited to .8w/sq ft as against allowable 1.3w/sq ft by the National Building Code.

ZERO-DISCHARGE FEATURE

Entire rainwater is collected and directed to harvesting tanks. Sewage is 100 percent recycled and treated and the recycled water is used for cooling tower makeup, gardening and flushing. Solar water heating, drip irrigation, native and low water consuming plants are adopted for efficient water management strategies.

Use of regional, reused, recycled building materials has been maximised to conserve natural resources.

As part of the construction management plan, the project managers and the labourers at the construction site have been extensively trained to minimise wastage and store wastage in allocated areas for further use or recycling. Construction waste was properly segregated and more than 95 percent is diverted from landfill by reusing, recycling or handing over to designated agencies. ▲

(Bhardwaj can be contacted at b.vidur@gmail.com)



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The emphasis is on natural light

SNAPSHOT

Project	Green Boulevard
Client	Meriton Infotech Pvt Ltd
Architects	Design & Development
Other Consultants	Spectral Services Consultant (Service Consultant) & Pioneer (Structural Consultant) & Other Consultants
Commencement Date	February 2007
Date of Completion	July 2008
Cost	Rs 150 crore
Area	700,000 sq ft approximately (leasable area)
Location	Noida