B A T T L E M c C A R T H Y ©
Consulting Engineers & Landscape Architects

PROJECT:
Greenspaces, Delhi, India

CLIENT:
Buckland and PRUPIM (joint venture)

ARCHITECT:
Perkins & Will, USA

BM SERVICES:
Civil, Structural, MEP Engineering and Landscape Architecture

CONTRACT DATES:
Due for completion for 2011

VALUE:
Classified

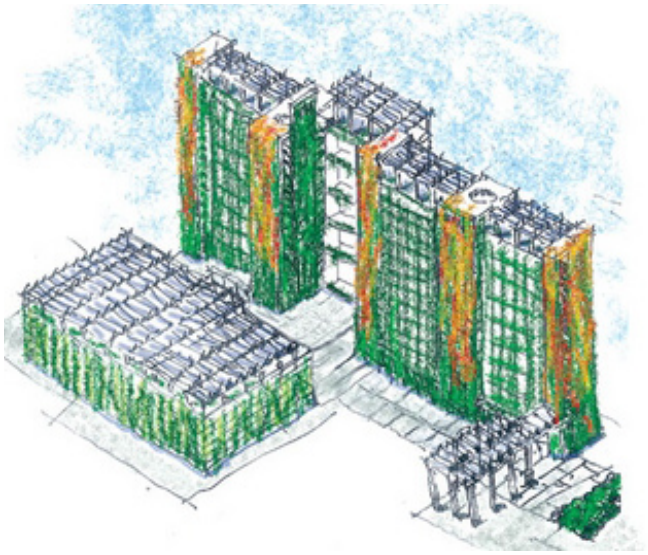
GreenSpaces is a 1.75 million ft² LEED© certified 'Super' Platinum Green Building and approved SEZ Information Technology Park, located only 6 kilometers (3.7 miles) from Delhi on the Faridabad border on National Highway 2 to Agra -- close to both NOIDA & Gurgaon.

Construction is scheduled to start in 2009 and will be ready for occupation by the middle of 2011 as a plug and play five star fully furnished and equipped facility.

DESIGN BRIEF

Buildings today account for 40% of total global energy usage. Our mission is to reshape the way commercial buildings are designed and built, with a view to reduce the impact on the environment and contribute to social development and sustainability. GreenSpaces will demonstrate that via technology, lifestyle changes, and design that one can economically reduce the energy consumed by buildings from 40% to 10%, and in the process prove that "Green is Green" and therefore sustainable and replicable.

In our mission, we're supported by the best possible team of over 30 project implementors and technology partners like General Electric, Carrier, Otis, IBM and ITT, and a world renowned Hon. Advisory Board.



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Battle McCarthy's environmental strategy for the Greenspaces office development

Stage one

Set within a highly industrialised zone of Delhi, the site of the Greenspaces development is subject to high levels of pollution during the morning and evening rush hours.

The buildings' shroud of vegetation plays a major role in absorbing pollution, collecting up to 40% of PM10s in the immediate atmosphere.

Creepers grow up stainless steel cables on steel tensors 1.2m in front of the facades. They are irrigated with grey water from the buildings.

This vertical landscape absorbs heat and sound and provides shading to the buildings. It supports biodiversity and, as it is tended and trimmed, it is also a source of biofuel.

Stage two

Standing 15m high on the roof, the plant house is the main air purifier for each 20-storey block. Within it, a series of 10m high by 7m wide meshes are hung 1.5m apart. A forest of tropical plants cling to them, fed by a constant flow of water. An array of LEDs causes the plants to photosynthesize constantly.

The plant house is the third and critical element in the air purification strategy. Initially, air is drawn in through EU7 and EU9 filters to remove larger pollutants. It passes through a water spray to rid it of smaller particles, down to PM10s, and to cool it.

Finally, the air passes through the plant house, where pollutants as small as PM2.5s and gases such as formaldehydes are extracted by the plant leaves, microbes and the roots.

Stage three

The occupants of the office and their equipment produce their own pollutants. To neutralise these, large areas of the walls are shrouded in spider plants. Set in vertical planters, the vegetation extracts CO2 and other gases from the air and refreshes it with extra oxygen.

Air from the Plant House is pumped into the office spaces at a rate of about 12 air changes per hour, via inlet grilles at floor level. The grilles around the perimeter of the building push the air through the vertical planters, further dispersing the oxygen generated by the spider plants.

Finally, the air passes through the plant house, where pollutants as small as PM2.5s and gases such as formaldehydes are extracted by the plant leaves, microbes and the roots.