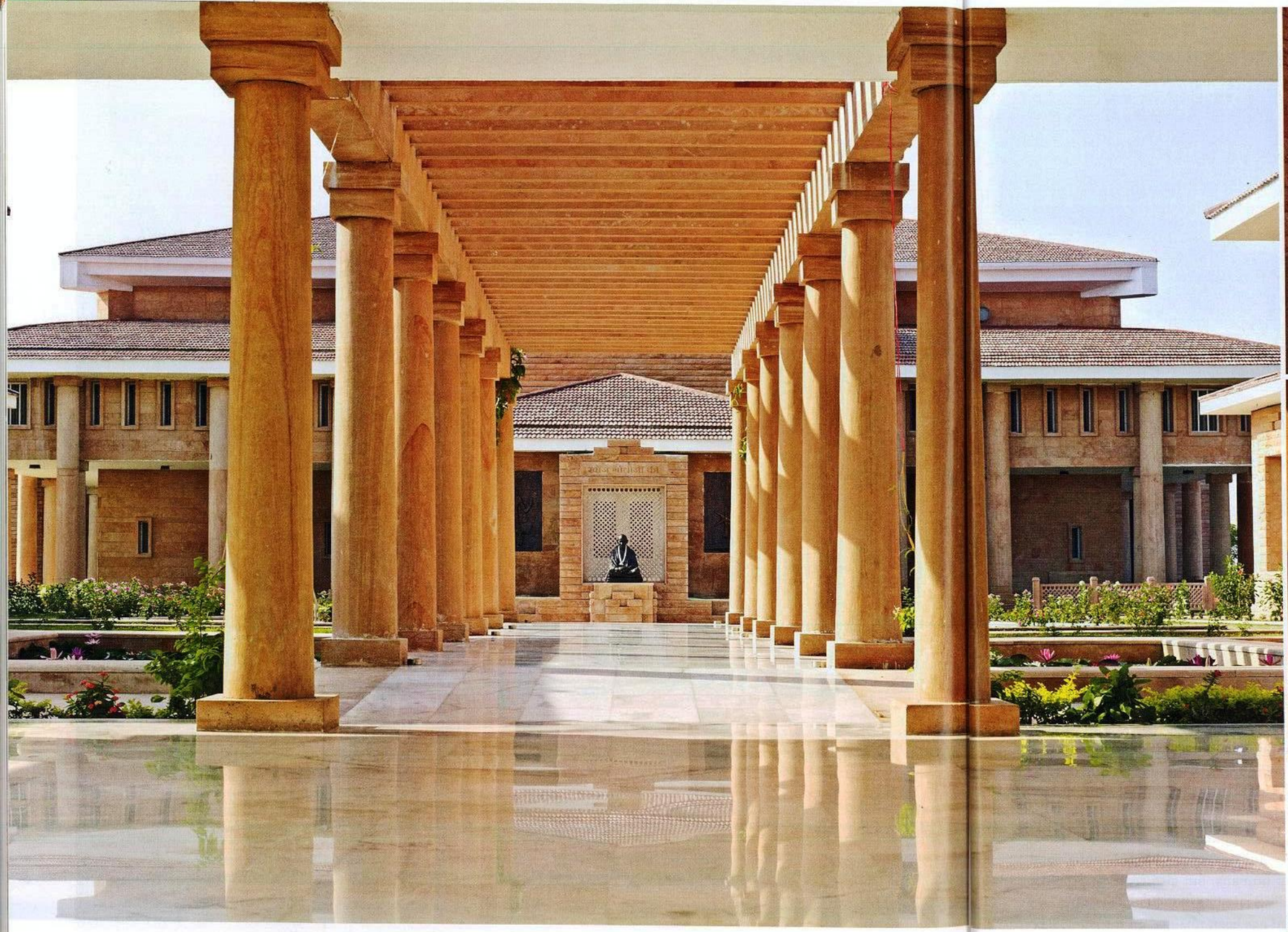
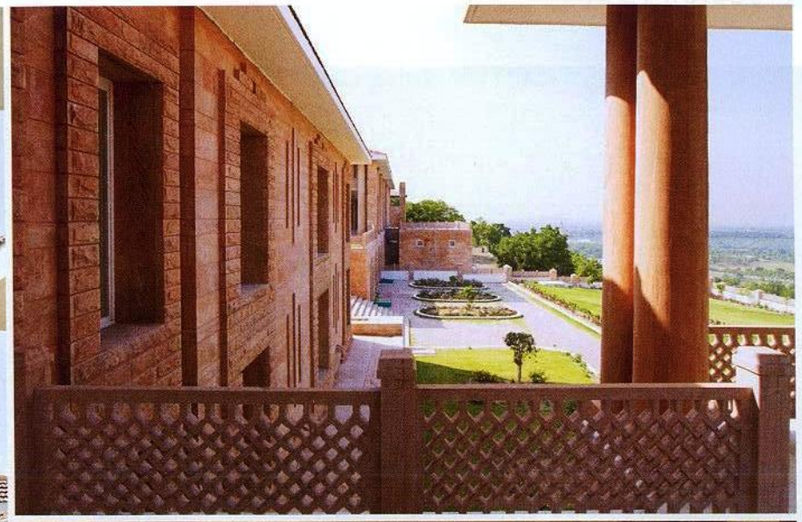
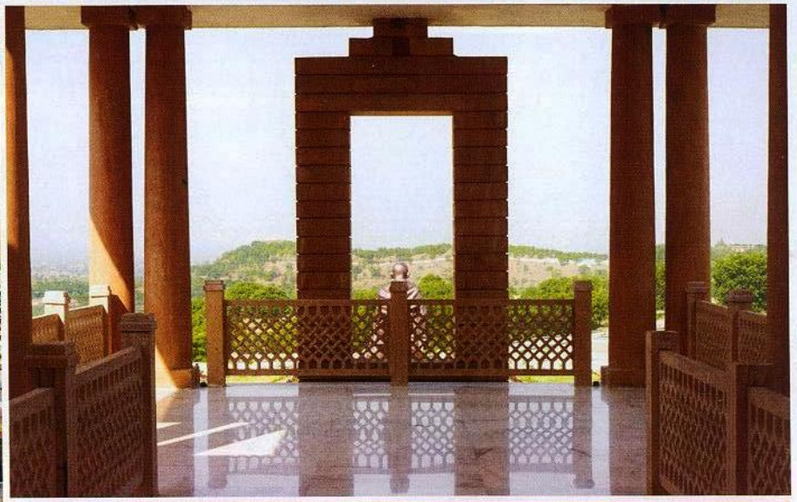
Naturally Inspiring

FOR THE GANDHI RESEARCH FOUNDATION IN JALGAON, MAHARASHTRA, ARCHITECT A MRIDUL AND sustainability advisory firm Environmental Design Solutions craft a sustainable complex with its sylvan settings. The ecologically-sensitive design truly resonates with Gandhi's vision of austere living







Located at Jain Hills in Jalgaon, Maharashtra, the Gandhi Research Foundation (GRF) complex was envisaged to 'preserve for posterity the profound legacy of Gandhi's life, thought and work'. Sponsored by Jain Irrigation Systems Limited and Bhavarlal and Kantabai Jain Multipurpose Foundation, an in-house charity, the structure and its sprawling landscape were conceived by Bhavarlal Jain, the Founder Trustee of GRF. Nestled within the verdant hills, far removed from any sources of noise or pollution, the campus, built to exacting sustainability norms, has been awarded a 5-star GRIHA rating and is on track to receive LEED Platinum status. Delhi-based Environmental Design Solutions (EDS), a sustainability advisory firm, played a vital role in achieving both the certifications, making it one of the few projects in India that will attain the highest recognition in both the LEED and GRIHA rating systems.

The facade of the building is clad in pale pink Jodhpur stone while the interior is made of flyash bricks—an environmentally responsible option compared to clay bricks. Native and adaptive species of plants, many of them drought-resistant, were carefully selected for grass, groundcover, shrubs and trees

Designed by Architect A Mridul from Jodhpur, the project features a meticulously devised zoning scheme that maintains the site's natural contours and preserves existing trees. Every effort was made to increase the permeable area on the site by maximising the landscaped area and introducing pervious hard-paved areas.

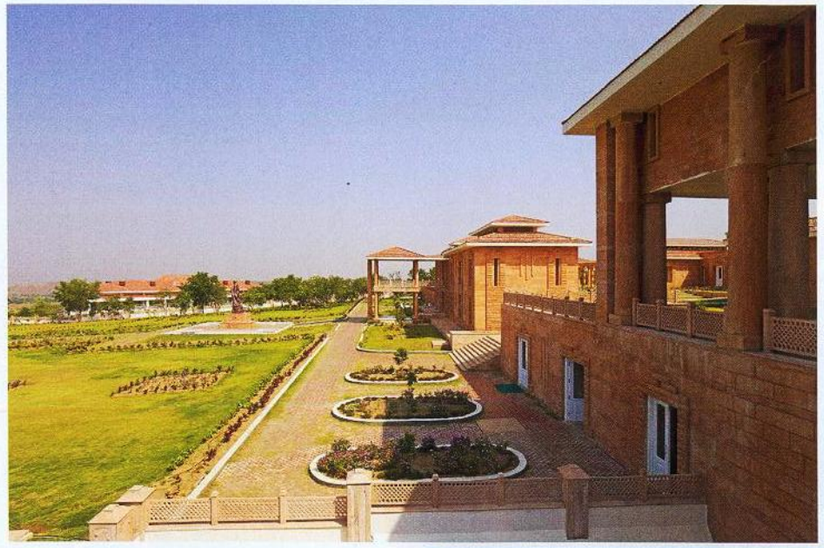
Heat penetration into the building is limited by orienting the structure—the longer axis is along the North-South while the shorter axis is along the East-West. Thin floor plates across ensure even distribution of daylight. Windows are designed to harvest maximum daylight and the envelope of the building has been devised to ensure a better U-value (a measure of thermal performance). The envelope comprises of a double skin with a cavity—pink Jodhpur stone on the exterior and fly-ash blocks in the interior.

Existing contours of the site determined the zoning of the structures and as a result a basement has been created in the low-lying area. Similarly, the central amphitheatre has been fashioned out of the natural contours of the site. This minimised the cut and fills on the site while maintaining the natural topography.

A substantial reduction in irrigation demand over the baseline is achieved by just the landscape design alone, which not only takes into account the functional and psychological needs of humans, but also seeks to promote bio-diversity by providing a habitat for the local fauna. An existing mango orchard has been retained on the site.

Plant selection for the campus was very crucial, as Jalgaon receives scanty rainfall and the client demanded the use of only drought-resistant native/adaptive species. Hence only species suited to the region's soil and climate were selected for grass, groundcover, shrubs and trees. This careful selection of native plants has the added benefit that they reflect seasonal changes and pose fewer maintenance problems than many non-adaptive, exotic varieties.

The post-occupancy storm water run-off from the roof



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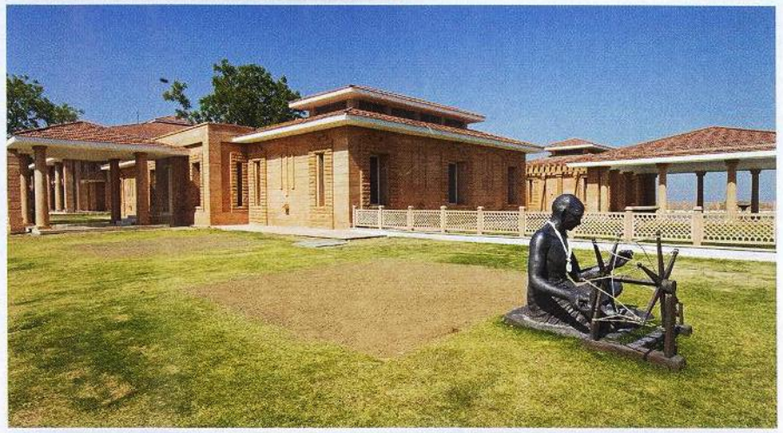
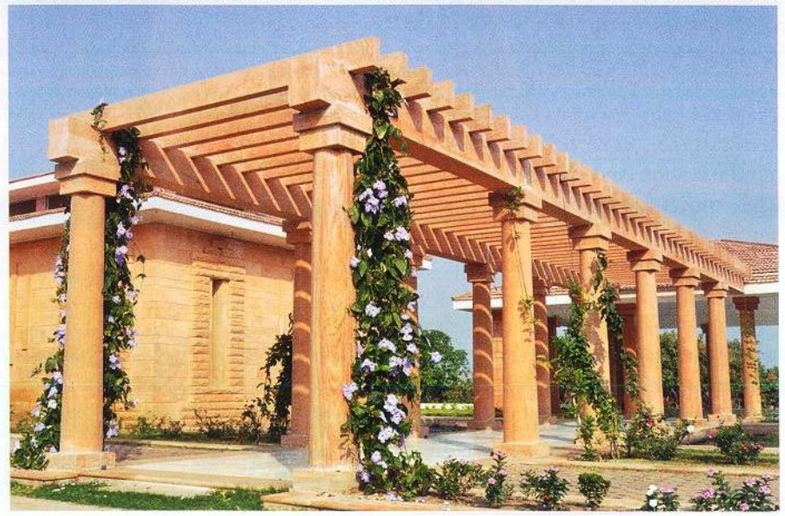
is clarified with a filter and is diverted for recharge to a nearby pond. The landscaped area has been lined with pipes covered with geo-textile fabric which filters suspended solids and allows clear storm water to be collected at a central location. This water is also diverted for recharge to a pond.

To further aid water conservation, losses due to inefficiency of irrigation are cut by the use of technologies like sprinkler drip irrigation and sprays. The resultant demand after the implementation of these measures is wholly fulfilled by non-potable sources (treated water from the effluent plant).

The flow and flush fixtures selected are highly efficient and reduce the burden on municipal water supply and wastewater systems, accounting for 50 percent reduction in water use. All of the generated sewage is treated in the on-site sewage treatment plant.

As GRF operates only during working hours and is closed for visitors/employees after work hours,



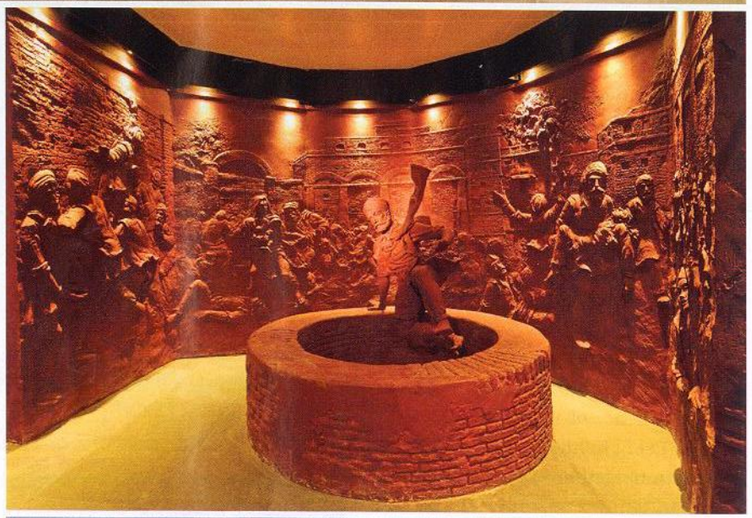


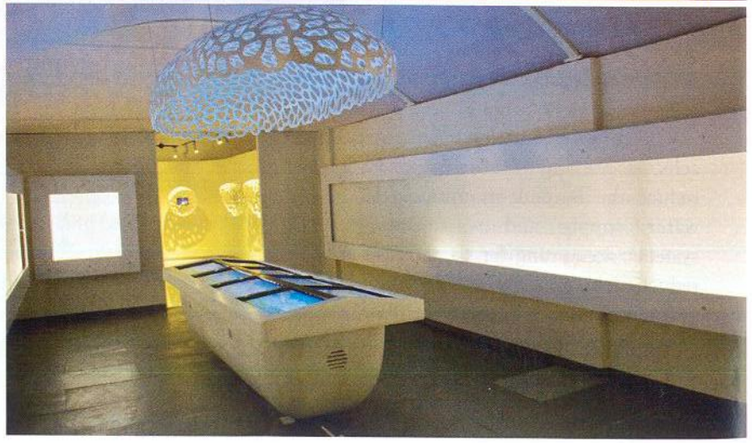
The Gandhi Museum inside features cutting-edge tactile and gesture technologies as a medium for story-telling

the exterior lighting design has been planned only for security purposes. Also, because of its location, which is similar to a rural setting, care has been taken to select fixtures which restrict the night sky pollution. The 1-Watt LED fixtures have been manufactured by Jain Irrigation's Research wing itself.

The majority of the spaces in GRF have been designed for passive ventilation. The various openings have been sized proportionately so as to facilitate cross-ventilation in the classrooms, administration and chairperson's cabin. The museum area is mechanically ventilated and has sensors mounted at strategic locations to measure the CO_2 concentration in the space. Air quality is improved by the use of green carpets, low VOC paints and sealants and use of green seal certified housekeeping chemicals. Over 75 percent of construction waste is recycled and diverted from the landfill.

The building incorporates both natural and mechanical systems for





achieving comfortable conditions. Notable features include overhangs and a high-efficiency envelope to reduce solar gains, excellent daylighting and efficient lighting. Energy for the entire complex is derived from onsite renewable sources comprising a solar power plant and a biogas plant. As the project is at a remote location, due consideration has been given to improve the transportation facility for employees, including public transportation access and a car pooling programme.

Living up to Gandhi's slogan 'Be the change you wish to see in the world', this project is exemplary in the manner in which it leaves no stone unturned in its quest for true sustainability.